



STIC Search Report

EIC 2800

STIC Database Tracking Number: 123830

TO: Hal D Wachsman
Location: JEF 6A01
Art Unit : 2857
Tuesday, June 08, 2004

Case Serial Number: 09/846899

From: Irina Speckhard
Location: EIC 2800 JEF 4B59
Phone: (571) 272-2554
irina.speckhard@uspto.gov

Search Notes

Examiner Wachsman,

Please find attached prior-art search results from the patent and non-patent abstract and full-text databases. The results were based on claims and statements of technical problems and solutions. Tagged records might be worth your review as well as the rest of the references provided.

If you need further searching or have questions or comments, please let me know.

Thank you,

IS

Irina Speckhard



Query/Command : his

File : PLUSPAT


SS Results

1	1	US20030060993/PN
2	1	..CITB US20030060993/PN
3	1	..CITF US20030060993/PN

Search statement 4

Query/Command : prt max set

1 / 1 PLUSPAT - ©QUESTEL-ORBIT

PN -  US2003060993 A1 20030327 [US20030060993]
TI - (A1) Dynamic performance measures
PA - (A1) INVENSYS SYSTEMS INC (US)
PA0 - Invensys Systems, Inc., [US]
IN - (A1) HUSSAIN FAYYAZ (US); RUSSELL MELANIE (US)
AP - US84689901 20010501 [2001US-0846899]
FD - Provisional: US 60235491 - 20000926 [2000US-P235491]
PR - US84689901 20010501 [2001US-0846899]
US23549100P 20000926 [2000US-P235491]
IC - (A1) G06F-019/00
PCL - ORIGINAL (O) : 702084000
DT - Basic
STG - (A1) Utility Patent Application published on or after January 2, 2001
AB - Methods and systems for creating dynamic performance measures (DPMs) for a cement production system. In an embodiment, clinker production and finish mill production can be optimized by aggregating sensor measurements from clinker production and finish mill production processes, and determining measures in the form of DPMs related to the productivity and cost of the clinker production and finish mill production. The DPMs can be provided to a display that can be viewed by manufacturing or other personnel. Control decisions can be made to change the clinker production and/or finish mill production processes while the results of such changes can be reflected in real-time on the DPM displays.
UP - 2003-15

06/08/2004

09/846,899

08jun04 14:55:36 User267149 Session D1437.1

SYSTEM:OS - DIALOG OneSearch

File 2:INSPEC 1969-2004/May W5
(c) 2004 Institution of Electrical Engineers
*File 2: Alert feature enhanced for multiple files, duplicates removal, customized scheduling. See HELP ALERT.
File 6:NTIS 1964-2004/Jun W1
(c) 2004 NTIS, Intl Cpyrght All Rights Res
File 8:Ei Compendex(R) 1970-2004/May W5
(c) 2004 Elsevier Eng. Info. Inc.
File 34:SciSearch(R) Cited Ref Sci 1990-2004/May W5
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File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
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(c) 2004 ProQuest Info&Learning
File 65:Inside Conferences 1993-2004/Jun W1
(c) 2004 BLDSC all rts. reserv.
File 94:JICST-EPlus 1985-2004/May W3
(c)2004 Japan Science and Tech Corp(JST)
File 99:Wilson Appl. Sci & Tech Abs 1983-2004/May
(c) 2004 The HW Wilson Co.
File 144:Pascal 1973-2004/May W5
(c) 2004 INIST/CNRS
File 305:Analytical Abstracts 1980-2004/May W3
(c) 2004 Royal Soc Chemistry
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File 315:ChemEng & Biotec Abs 1970-2004/May
(c) 2004 DECHEMA
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200435
(c) 2004 Thomson Derwent
*File 350: For more current information, include File 331 in your search. Enter HELP NEWS 331 for details.
File 347:JAPIO Nov 1976-2004/Jan(Updated 040506)
(c) 2004 JPO & JAPIO
*File 347: JAPIO data problems with year 2000 records are now fixed. Alerts have been run. See HELP NEWS 347 for details.
File 344:Chinese Patents Abs Aug 1985-2004/May
(c) 2004 European Patent Office
File 371:French Patents 1961-2002/BOPI 200209
(c) 2002 INPI. All rts. reserv.
*File 371: This file is not currently updating. The last update is 200209.

Set Items Description

06/08/2004

09/846,899

Set	Items	Description
S1	4422	(KILN OR KILNED OR KILNING OR KILNS OR OVEN? ?) (3N) (OUTPUT OR OUT() PUT OR FEED? OR DUST?)
S2	30396	(CEMENT? OR HARDEN? OR CLINKER? OR RESIDUE) (3N) (PRODUCE? OR PRODUCT?)
S3	323606	CEMENT?
S4	18771	CLINKER?
S5	342581	S2:S4
S6	86	COST? (3N) CLINKER?
S7	1628	DUST? (3N) (LOSS OR LOSING OR LOST OR LOSSES)
S8	1798	(RAW OR OUTPUT OR OUT() PUT) (3N) MEAL?
S9	3425	S7:S8
S10	306	SLURR? (3N) (INPUT OR IN() PUT OR KILN OR KILNED OR KILNING OR KILNS OR OVEN? ?)
S11	12214	COAL? (3N) (FEED? OR SUPPLY OR SUPPLIED OR INSERT?)
S12	69127	(FEED? OR SUPPLY OR SUPPLIED OR INSERT?) (3N) RATE?
S13	80664	S11:S12
S14	27386	(NON() COAL OR WASTE? OR WASTING) (3N) FUEL?
S15	347924	ALARM? OR ALERT? OR WARN? OR NOTIF?
S16	1445	S5 AND S1
S17	83	S16 AND S9
S18	6	S17 AND S13
S19	6	RD (unique items)
S20	77	S17 NOT S18
S21	2	S20 AND S14
S22	2	RD (unique items)
S23	75	S20 NOT S21
S24	0	S23 AND S15
S25	0	S23 AND S6
S26	0	S23 AND S10
S27	2	S1 AND S6
S28	2	RD (unique items)
S29	35	S2 AND S6
S30	1	S29 AND S9
S31	34	S29 NOT S30
S32	0	S31 AND S10
S33	1	S31 AND S13
S34	33	S31 NOT S33
S35	0	S34 AND S15
S36	31	RD S34 (unique items)
S37	374	S1 AND S13
S38	9	S37 AND (S14 OR S15)
S39	5	RD (unique items)
S40	1072	S5 AND S9
S41	202	S40 AND S2
S42	2	S41 AND S10
S43	200	S41 NOT S42
S44	23	S43 AND S1
S45	21	S44 NOT S18, S21, S27, S30, S33, S34, S38, S42
S46	18	RD (unique items)

19/3,AB/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC
(c) 2004 Institution of Electrical Engineers. All rts. reserv.

02392184 INSPEC Abstract Number: B85014629, C85009371
Title: Experience with flowmeters for **kiln feeding** at Ideal
Basic Industries, Cris Dobbins Plant, Theodore, Alabama
Author(s): Peterson, G.D.; Rebucci, G.
Author Affiliation: Ideal Basic Ind., Theodore, AL, USA
Conference Title: 26th IEEE Cement Industry Technical Conference (Catalog
No. 84CH1989-3) p.II.4/1-9
Publisher: IEEE, New York, NY, USA
Publication Date: 1984 Country of Publication: USA 600 pp.
U.S. Copyright Clearance Center Code: CH1989-3/84/0000-0007\$01.00
Conference Sponsor: IEEE
Conference Date: 21-24 May 1984 Conference Location: Anaheim, CA, USA
Language: English
Abstract: The authors present the solution to a problem common to fine
powder handling and feeding, and also describes the production flow process
of a modern **cement** plant. In the system described, the solids
flowmeter system utilizes the principle of conservation of momentum to
measure flow rate. The controller compares the measured flow rate to the
set point and adjusts the flow control valve on the airlslide to maintain
the desired **feed rate** of **raw meal**.
Subfile: B C

19/3,AB/2 (Item 1 from file: 8)
DIALOG(R)File 8:EI Compendex(R)
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05497521
E.I. No: EIP00025061003
Title: Modern metering technology throughout the **cement**
manufacturing process
Author: Ehrenhuber, Wolfgang
Corporate Source: PFISTER GmbH, Augsburg, Ger
Conference Title: Proceedings of the 1999 IEEE-IAS/PCA Cement Industry
Technical Conference
Conference Location: Roanoke, VA, USA Conference Date:
19990411-19990415
E.I. Conference No.: 55831
Source: IEEE Cement Industry Technical Conference (Paper) 1999. p 143-149
Publication Year: 1999
CODEN: ICIPDM ISSN: 0731-4906
Language: English
Abstract: This paper describes a new type of weighfeeder designed
specifically for the feeding and blending applications of difficult to
handle materials found in the **cement** manufacturing process. The
design and control scheme is described along with the features that address
the requirements for handling specific materials such as, coal, coke,
raw meal, fly ash, and alternate fuels. (Author abstract)

19/3,AB/3 (Item 2 from file: 8)
DIALOG(R)File 8:EI Compendex(R)
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01588587
E.I. Monthly No: EI8411114098

E.I. Yearly No: EI84015470

Title: OLDER PLANT IS MODERNIZED WITH MICROPROCESSOR TECHNOLOGY.

Author: Herod, Sandy

Corporate Source: Pit & Quarry, Chicago, Ill, USA

Source: Pit & Quarry v 77 n 1 Jul 1984 p 72-74, 76

Publication Year: 1984

CODEN: PIQUAN ISSN: 0032-0293

Language: ENGLISH

Abstract: Lohja Corporation in Virkkala, Finland developed a microprocessor-based kiln control system, the Lohja Kilnmatic system, provides immediate control of **raw meal feed rate**, kiln rotation speed, total air flow, primary air flow, and fuel **feed rate**.

19/3,AB/4 (Item 3 from file: 8)

DIALOG(R)File 8:EI Compendex(R)

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00093486

E.I. Monthly No: EI70X037111

Title: Largest suspension pre- heater kiln.

Author: ANON

Source: Chem Can v 21 n 9 Oct 1969 p 36

Publication Year: 1969

Language: ENGLISH

Abstract: The expansion last year at the Clarkson, Ontario, plant of St. Lawrence **Cement** Co involved the installation of the largest suspension preheater kiln system in North America. This dry process kiln installation, coupled with a new **raw meal** grinding system added 2500 tpd to the plant's previously installed 2100 ton capacity by the wet process method. The Humboldt preheater system was chosen because it was considered most feasible in installed cost, mechanical makeup of the processing components, and guaranteed capacity. This preheater system is installed at the dry **feed** end of the kiln. It includes a number of cyclones through which gases pass en route to an electrostatic precipitator. The newaerofall grinding mill installed takes 8 in. stone, thus eliminating the requirement for secondary crushing. Process control installation involves continuous sampling of the product from the raw material grinding mill. These samples are taken by screw conveyor to the adjoining laboratory where samples are prepared for analysis in an x- ray spectrometer and console. Results are fed to a computer which calculates the corrections required in the material **feed rates** to the mill to obtain the ideal chemical composition. The required correction is then made through the remote control console in the laboratory.

19/3,AB/5 (Item 1 from file: 99)

DIALOG(R)File 99:Wilson Appl. Sci & Tech Abs

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2158032 H.W. WILSON RECORD NUMBER: BAST00049430

INCSA lowers costs with rotor weighfeeder

Rock Products Cement Americas (July/Aug. 2000 supp) p. 7

DOCUMENT TYPE: Feature Article ISSN: 0035-7464

ABSTRACT: Industria Nacional de **Cemento** S.A. (INCSA) in Cartago, Costa Rica, has replaced a nuclear weighing system with a Pfister rotor weighfeeder for **raw meal**. The process of **feeding** material into rotary kilns is a major component in stabilizing the

process and optimizing costs. The rotor weighfeeder has a nominal **feed rate** of 75 tph and has saved about \$27,000 per year in energy costs. INCSA found that this system offered no problems with dosage measurements, stabilization of furnaces, and a reduction in energy consumption.

19/3,AB/6 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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004243744

WPI Acc No: 1985-070622/198512

XRAM Acc No: C85-030617

XPX Acc No: N85-052718

Appts. for denitration of kiln exhaust gases - involves **feeding**
coal particles to **kiln** from inlet end for combustion in
preheating zone

Patent Assignee: ISHIKAWAJIMA HARIMA JUKOGYO KK (ISHI)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 60023778	A	19850206	JP 83129336	A	19830718	198512 B

Priority Applications (No Type Date): JP 83129336 A 19830718

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 60023778	A		5		

Abstract (Basic): JP 60023778 A

In a rotary kiln for **cement** manufacturing, coal particles
(30) are fed to the kiln from the kiln inlet end for combustion in the
preheating zone (D).

ADVANTAGE - NOx generated by high-temperature combustion of the fuel (17)
in the kiln main burner (9) is reduced by converting the preheating
zone (D) to a reducing zone by combusting the coal with oxygen
available in it. Appts. can be cheaply added without major modification
to the existing equipment.

In an embodiment, a **coal feeding** appts. (19) is
provided to **feed coal** (20) of suitable particle size to the
inlet of the kiln separately or together with **raw meal** (
cement raw material, 23). The particle size and **feed**
quantity of **coal** (30) may be adjustable depending on the length
of its travel down the preheating zone (D). When necessary, air may be
blown through a nozzle (35) from the kiln inlet end to attain complete
combustion (i.e., remove CO) of the kiln exhaust gases before they
leave the kiln.

,3/7

22/3,AB/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC
(c) 2004 Institution of Electrical Engineers. All rts. reserv.

7290777 INSPEC Abstract Number: B2002-07-8670-007, C2002-07-3350N-003
Title: Commissioning a 2.2 mt/y **cement** plant in Midlothian, Texas
Author(s): Wurman, M.A.; Brown, W. *du*
Conference Title: IEEE-IAS/PCS 2002 Cement Industry Technical Conference.
Conference Record (Cat. No.02CH37282) p.125-37
Publisher: IEEE, Piscataway, NJ, USA
Publication Date: 2002 Country of Publication: USA 360 pp.
ISBN: 0 7803 7254 9 Material Identity Number: XX-2002-01640
U.S. Copyright Clearance Center Code: 0-7803-7254-9/02/\$10.00
Conference Title: IEEE-IAS/PCA 2002 Cement Industry Technical Conference.
Conference Record
Conference Date: 5-9 May 2002 Conference Location: Jacksonville, FL, USA

Language: English

Abstract: TXI operates and maintains a **cement** plant in Midlothian, Texas. The original plant consisted of four wet process lines with a yearly **clinker production** of about 1088400 mtpy (1200000 stpy). The fuels utilized are natural gas and coal along with **waste fuels**. With the increasing demand for **cement** in the Texas market, TXI decided to expand the plant capacity by adding a large dry process **clinker production** line and shut down two of the existing wet kiln lines. Due to strict environmental restrictions, the plant's overall **clinker production** after the capacity increase had to be achieved while maintaining the new stringent emission permit limits. This was a challenge as the raw materials contain significant amounts of carbon and pyritic sulfur. TXI commissioned equipment for a new 2200000 stpy (6000 stpd) dry **clinker production** line, designed and supplied by FL Smidth Inc., that more than doubled the yearly capacity of the existing facility. This modern **clinker production** line incorporates all of the latest technology, in terms of chemical control, emissions control and abatement, and process features that allows the plant to operate under these strict environmental conditions. This paper covers TXI's expansion project and identifies the relevant system design issues and operational results.

Subfile: B C

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22/3,AB/2 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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009769136

WPI Acc No: 1994-048987/199406

XRAM Acc No: C94-022218

XRFX Acc No: N94-038464

Minimising **dust loss** in long **cement** kiln to improve efficiency and capacity - by withdrawing significant proportion of kiln gas upstream of drying section

Patent Assignee: ASH GROVE CEMENT CO (ASHG-N); CADENCE ENVIRONMENTAL ENERGY INC (CADE-N)

Inventor: HANSEN E R; TUTT J R

Number of Countries: 044 Number of Patents: 014

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 9402792	A2	19940203	WO 93US6491	A	19930709	199406 B

AU 9346715	A	19940214	AU 9346715	A	19930709	199425
			WO 93US6491	A	19930709	
WO 9402792	A3	19940317	WO 93US6491	A	19930709	199515
EP 649509	A1	19950426	EP 93917077	A	19930709	199521
			WO 93US6491	A	19930709	
CZ 9500021	A3	19950712	CZ 9521	A	19930709	199538
US 5451255	A	19950919	US 92913587	A	19920714	199543
			US 93168058	A	19931215	
US 5454715	A	19951003	US 92913587	A	19920714	199545
			US 94212252	A	19940309	
HU 69890	T	19950928	WO 93US6491	A	19930709	199546
			HU 95122	A	19930709	
SK 9500056	A3	19951011	WO 93US6491	A	19930709	199550
			SK 9556	A	19930709	
JP 7509688	W	19951026	WO 93US6491	A	19930709	199551
			JP 94504510	A	19930709	
EP 649509	A4	19960424	EP 93917077	A	19930000	199643
US 5569030	A	19961029	US 92913587	A	19920714	199649
			US 93170496	A	19931220	
			US 94332459	A	19941031	
NZ 254561	A	19970129	NZ 254561	A	19930709	199711
			WO 93US6491	A	19930709	
BR 9306724	A	19981208	BR 936724	A	19930709	199903
			WO 93US6491	A	19930709	

Priority Applications (No Type Date): US 92913587 A 19920714; US 93168058 A 19931215; US 94212252 A 19940309; US 93170496 A 19931220; US 94332459 A 19941031

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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WO 9402792	A2	G	39	F27B-005/16	
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Designated States (National): AU BB BG BR BY CA CZ FI HU JP KP KR KZ LK MG MN MW NO NZ PL RO RU SD SK UA VN

Designated States (Regional): AT BE CH DE DK ES FR GB GR IE IT LU MC NL OA PT SE

AU 9346715	A		F27B-005/16	Based on patent WO 9402792
EP 649509	A1	E	F27B-005/16	Based on patent WO 9402792
				Designated States (Regional): AT BE DE ES FR GB GR IT NL SE
US 5451255	A	16	C04B-007/43	Div ex application US 92913587
US 5454715	A	17	F27B-007/00	Cont of application US 92913587
HU 69890	T		F27B-005/16	Based on patent WO 9402792
JP 7509688	W	13	C04B-007/44	Based on patent WO 9402792
US 5569030	A	16	F27B-007/00	Cont of application US 92913587
				Cont of application US 93170496
NZ 254561	A		F27B-005/16	Based on patent WO 9402792
BR 9306724	A		F27B-005/16	Based on patent WO 9402792
WO 9402792	A3		F27B-005/16	
CZ 9500021	A3		F27B-005/16	
SK 9500056	A3		F27B-005/16	
EP 649509	A4		F27B-005/16	

Abstract (Basic): WO 9402792 A

Cement clinker is produced by the wet or dry process in a long rotary kiln having a **clinkering** zone adjacent to the fired end and a drying zone adjacent to the upper end from which a dust-contg. gas stream flows to a dust collection system. Between those two zones is a calcining zone. A part of the kiln gases, partic. at least 10%, is withdrawn through a port in the kiln wall at a location upstream, in terms of gas flow, of the drying zone. Pref. that location is downstream of the hottest region of the calcining zone. the withdrawn stream may be quenched, as by dilution with ambient air, and

the pptd. alkali fume at least partially recovered. The treated gases may be recombined with the main stream upstream of the dust collection system.

In modification solid **fuel**, esp. **waste** matter, may be charged through a further port into the calcining zone, and/or air may be injected through a further port downstream of the hottest region of the calcining zone but upstream of the gas withdrawal and fuel injection ports. The gas stream may be withdrawn into an annular plenum aligned with the port and maintained under reduced pressure. The withdrawn stream may be analysed to monitor combustion products.

ADVANTAGE - Improved efficiency and capacity of **kiln** due to reduced **dust loss**. **Dust** has reduced alkali content. Combustion efficiency monitored without interference from organic matter.

Dwg.5/8

Abstract (Equivalent): US 5569030 A

A method for improving the oxidation of hydrocarbons in a kiln gas stream in a conventional long rotary **cement** kiln including a rotary vessel having a **clinkering** zone, an intermediate calcining zone, a mineral drying zone and the kiln gas stream flowing from the **clinkering** zone through the calcining and drying zones, the kiln modified to include a solid fuel charging appts. for delivering combustible solids into the intermediate calcining zone in the kiln, the method comprising the steps of forming an air injection port in the wall of the rotary vessel of the kiln at a point downstream relative to kiln gas flow of the solid fuel charging appts. and upstream of the drying zone, and injecting air into the kiln gas stream through the air injection port in the rotary vessel wall to provide an oxygen-enriched kiln gas stream.

Dwg.1/12

US 5454715 A

A method for improved manufacturing of **cement** in a long kiln with a rotary vessel (17) with a fired lower end, adjacent **clinkering** zone and upper gas exit consists of withdrawing a portion of the kiln gas stream from the vessel at an upstream point in the flow in the mineral drying zone to form a kiln gas by-pass stream. The gas is withdrawn through a port (93) in the rotary vessel (17), with a by-pass inlet tube (94) extending from the port into the vessel for a distance greater than the depth of the mineral stream to an open area adjacent to the centre of the vessel.

The port (93) is surrounded by an annular plenum (92) in which a reduced pressure is created to withdraw at least a portion of the kiln gas stream, and which contains a cooler for the gas stream after it has been withdrawn.

ADVANTAGE - Allows drying zone of kiln to operate independently, limiting energy supply to drying/preheating zone to the required level.

Dwg.3/12

US 5451255 A

Method for monitoring combustion efficiency in an operating long rotary **cement** kiln (10) is accomplished without interference from volatilised organics typically released into the kiln gas stream in the mineral drying pre-heat zone (24) from the **cement** raw materials.

The method comprises forming a gas by-pass stream (64) via kiln by-pass system (54) in an amt. at least sufficient for monitoring combustion efficiency. The flow goes from the rotary vessel (17), through a port with the rotary vessel (17) at a point upstream of the mineral drying/preheat zone (24) relative to the flow (90, 138) of the kiln gas stream. The kiln by-pass stream gases are analysed to identify combustion products produced therein.

USE/ADVANTAGE - For monitoring the combustion efficiency in an

operating long rotary **cement** kiln. Use of this invention to form a kiln gas bypass stream enhances operating efficiencies of long **kilns** by reducing **dust loss**, by facilitating isolation of high alkali by-product streams, by reducing alkali content of collected **kiln dust**, by increasing energy efficiency of long kiln operations, and by allowing greater overall control in **cement** mfr.

Dwg.1/12

28/3,AB/1 (Item 1 from file: 8)
DIALOG(R)File 8:EI Compendex(R)
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02736501

E.I. Monthly No: EI8905046143
Title: Dosierwaagen fuer Kohlenstaub.
Title: Weigh-feeders for pulverized coal.
Author: Kamuff, R.; Landsmann, G.
Source: ZKG International, Edition B v 41 n 11 Nov 1988 p 573-575
Publication Year: 1988
CODEN: ZIETE6 ISSN: 0722-4397
Language: German

Abstract: Accurately controlled feeding of pulverized coal at a uniform rate is a factor in reducing the operating **costs** associated with cement **clinker** production. For reliable performance in this respect the only suitable feeding systems are gravimetric ones with high short-term constancy and high accuracy of feeding. In respect of their mechanical and electrical features Simplex weigh-feeders comply with the regulations for the prevention of dust explosions in pulverized coal installations in accordance with the directives of the relevant industrial associations. They operate on the principle of controlled loss in weight. The weigh hopper and special feed screw are mounted on an electromechanical weigher. Adjustment is effected computationally, without the use of test weights. Using these weigh-**feeders** in conjunction with **kiln** operation offers advantages in terms of clinker production. (Author abstract) In German.

28/3,AB/2 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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015387288

WPI Acc No: 2003-448233/200342
XRPX Acc No: N03-357541

Production process monitoring system for cement manufacture, involves displaying computed **clinker** production and **cost** of **clinker** as function of time

Patent Assignee: INVENSYS SYSTEMS INC (INVE-N)
Inventor: HUSSAIN F; RUSSELL M
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20030060993	A1	20030327	US 2000235491	P	20000926	200342 B
			US 2001846899	A	20010501	

Priority Applications (No Type Date): US 2000235491 P 20000926; US 2001846899 A 20010501

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030060993	A1		13	G06F-019/00	Provisional application US 2000235491

Abstract (Basic): US 20030060993 A1

Abstract (Basic):

NOVELTY - The **cost** of **clinker** is calculated based on the clinker production which is computed at the **kiln output**. The computed **clinker** production and **cost** of **clinker** are displayed as functions of time.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the

following:

- (1) kiln efficiency measuring system;
- (2) finish mill efficiency measuring system; and
- (3) cement production process control system.

USE - For monitoring production process in cement manufacturing system.

ADVANTAGE - Improves plant operation performance to achieve maximum clinker quality and production at minimal cost.

DESCRIPTION OF DRAWING(S) - The figure illustrates a display screen displaying the dynamic performance measures for cement production process.

pp; 13 DwgNo 2/3

30/3,AB/1 (Item 1 from file: 344)
DIALOG(R)File 344:Chinese Patents Abs
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Acc no: 4037420

PRODUCTION OF CEMENT CLINKER WITH TAILINGS FROM COPPER MINE

Patent Assignee: QINGSHANG COPPER MINE CHANGLE (CN)

Author (Inventor): JIANG YUANCHUN (CN)

Patent Family:

CC Number	Kind	Date
CN 1067421	A	921230 (Basic)

Application Data:

CC Number	Kind	Date
*CN 92106479	A	920421

Abstract: The present invention relates to a method of producing silicate cement clinker by use of tails of copper ore. It is mainly characterized by that the tails of copper ore, limestone, clay, iron powder and anthracite are used as the raw materials, and after the above-mentioned raw materials are mixed into the raw meal balls, by their weight per cent of 5-9:71-80:4.5-6.5: 1.5-2.5:6-11, and they are calcined to partially fused state, so that the product with calcium silicate as the main ingredient is obtained. Said invention effectively uses the tails of copper ore, reduces its land occupation and environmental pollution, and can reduce the production cost of cement clinker.

? DS20-

33/3,AB/1 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)
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02736501

E.I. Monthly No: EI8905046143

Title: Dossierwaagen fuer Kohlenstaub.

Title: Weigh-**feeders** for pulverized **coal**.

Author: Kamuff, R.; Landsmann, G.

Source: ZKG International, Edition B v 41 n 11 Nov 1988 p 573-575

Publication Year: 1988

CODEN: ZIETE6 ISSN: 0722-4397

Language: German

Abstract: Accurately controlled **feeding** of pulverized **coal** at a uniform rate is a factor in reducing the operating **costs** associated with **cement clinker production**. For reliable performance in this respect the only suitable feeding systems are gravimetric ones with high short-term constancy and high accuracy of feeding. In respect of their mechanical and electrical features Simplex weigh-feeders comply with the regulations for the prevention of dust explosions in pulverized coal installations in accordance with the directives of the relevant industrial associations. They operate on the principle of controlled loss in weight. The weigh hopper and special feed screw are mounted on an electromechanical weigher. Adjustment is effected computationally, without the use of test weights. Using these weigh-feeders in conjunction with kiln operation offers advantages in terms of **clinker production**. (Author abstract) In German.

36/3,AB/1 (Item 1 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 2004 Institution of Electrical Engineers. All rts. reserv.

6306740 INSPEC Abstract Number: B1999-09-8670-009, C1999-09-3350N-007

Title: Cape Girardeau's low **cost** 100000 ton **clinker** expansion

Author(s): Burian, J.E.; Zolotsky, S.J.

Conference Title: 1999 IEEE/-IAS/PCA Cement Industry Technical
Conference. Conference Record (Cat. No.99CH36335) p.279-95

Publisher: IEEE, Piscataway, NJ, USA

Publication Date: 1999 Country of Publication: USA 429 pp.

ISBN: 0 7803 5523 7 Material Identity Number: XX-1999-00125

U.S. Copyright Clearance Center Code: 0 7803 5523 7/99/\$10.00

Conference Title: Proceedings of 41st Cement Industry Technical
Conference

Conference Date: 11-15 April 1999 Conference Location: Roanoke, VA,
USA

Language: English

Abstract: Lone Star Industries, Inc. (LSI) operates a cement plant at Cape Girardeau, Missouri, USA. The Fuller Company was requested to study the operation of the plant's raw grinding and pyro-processing systems and evaluate if an increase in the nominal **clinker production** could be achieved. The impetus for the evaluation was Lone Star's desire to meet the future cement sales demand for the Mississippi Valley market. The evaluation team involved Fuller process and mechanical specialists who visited the site and surveyed the existing plant operations to determine the limitations of the process machinery, recommend operational changes and develop a report with their findings. All recommendations had to emphasize re-using as much of the existing equipment as possible in order to arrive at an economically justifiable solution, in terms of both capital investment and the shortest possible downtime.

Subfile: B C

Copyright 1999, IEE

36/3,AB/2 (Item 2 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 2004 Institution of Electrical Engineers. All rts. reserv.

00474679 INSPEC Abstract Number: B73007639

Title: Planetary vs. grate coolers

Author(s): Enkegaard, T.; Ellis, C.B.

Author Affiliation: F.L. Smidth & Co. A/S Copenhagen, Denmark

Conference Title: Proceedings of the 1972 Seventh Annual Meeting of the
IEEE Industry Applications Society p.213-20

Publisher: IEEE, New York, NY, USA

Publication Date: 1972 Country of Publication: USA xx+861 pp.

Conference Sponsor: IEEE

Conference Date: 9-12 Oct. 1972 Conference Location: Philadelphia, PA,
USA

Language: English

Abstract: The selection of a cement clinker cooler is usually based on the quality of **clinker** produced, grindability of the **clinker**, burning conditions and **cost** considerations. It is shown that while the first three of these factors are satisfied equally well by the planetary and grate cooler, the planetary cooler has a decided cost advantage.

Subfile: B

36/3,AB/3 (Item 1 from file: 6)
DIALOG(R)File 6:NTIS
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1690574 NTIS Accession Number: PB93-114205

Suspension Process for Cement Synthesis. Final Report, April-September 1985

Tiwary, R.
Avco-Everett Research Lab., Inc., Everett, MA.
Corp. Source Codes: 061902000
Sponsor: Gas Research Inst., Chicago, IL.
Report No.: GRI-85/0188
Oct 85 74p
Languages: English
Journal Announcement: GRAI9303
Sponsored by Gas Research Inst., Chicago, IL.

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NTIS Prices: PC A04/MF A01

An analytical study and economical evaluation of a suspension furnace for synthesizing cement clinker from batch materials is described. Pellets made of batch materials are sprayed from the top of a cylindrical furnace, natural gas is fired in the middle, and combustion air is introduced from the bottom. The freely falling pellets heat up to clinkering reaction temperature and then cool down in the upcoming cold air. A model was generated to predict temperature and velocity of gas and particles at various locations in the furnace. Several possible designs of the furnace were generated using the model. The **cost** of producing cement **clinker** using the new design as well as using the best available current technology was evaluated. Both capital and operating cost were determined. The suspension furnace will **produce cement** at a lower cost primarily because the simpler furnace is less expensive to build. The potential application of the process was determined to be in retrofitting old kilns and in new cement plants built to meet increased demand.

36/3,AB/4 (Item 1 from file: 8)
DIALOG(R)File 8:EI Compendex(R)
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06758165

E.I. No: EIP04128062237
Title: Shemal expansion
Author: Richter, Gerard; Fard, Ali Memari
Corporate Source: CEMAG Anlagenbau Hameln, Hameln, Germany
Source: World Cement v 35 n 2 February 2004. p 21-22+24-26
Publication Year: 2004
CODEN: WOCEDR ISSN: 0263-6050
Language: English

Abstract: In 2001, CEMAG Anlagenbau was awarded a feasibility study to examine the most economical way to optimize and expand **production** at the Shemal **Cement** plant to 4000 tpd, and alternatively 4800 tpd, **clinker production**. Based on detailed studies of technological possibilities, logistics, as well as surveys of existing equipment, a number of different solutions involving reasonable investment costs were put forward to the plant management. Evidence suggests that the optimization of existing equipment and an extension up to 4000 t

clinker production would be the best compromise in relation to the investment into per ton and per day **clinker production**.
(Edited abstract)

36/3,AB/5 (Item 2 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)
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06398216

E.I. No: EIP03227487533
Title: Betriebserfahrungen mit einem RSP-Minox-calcinator im zementwerk Lixhe

Title: Operational experience with an RSP Minox calciner at the Lixhe cement plant

Author: Gastout, B.; Delcour, F.

Source: ZKG International v 56 n 4 2003. p 64-68

Publication Year: 2003

CODEN: ZKGIFW ISSN: 0949-0205

Language: German; English

Abstract: The last wet kiln line of the Lixhe cement works of the CBR group was shut down in 2001 within the framework of a conversion project. The other existing kiln line operating according to the dry process was given a facelift. Due to the conversion of the preheater and the installation of a new calciner, type RSP Minox, the plant capacity could be increased from formerly 1 Mta to 1.35 Mta of clinker. In addition to the increase of the plant capacity, the productivity of the works could also be increased due to saving of labour. Furthermore, the **clinker production costs** could be optimized due to the utilization of the maximum possible amount of secondary fuels and, all emissions were reduced thus better discharging the environmental duties. The conversion of all ESP systems into baghouses resulted in a reduction of the dust emissions. Since the beginning of the conversion in July 2001, all goals of the project have been reached or even exceeded.

36/3,AB/6 (Item 3 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)
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05022248

E.I. No: EIP98054215845

Title: Limestone mining by cement industry in eastern India - an overview

Author: Ojha, A.K.

Corporate Source: OCL India Ltd, Orissa, India

Source: Journal of Mines, Metals & Fuels v 45 n 6-7 Jun-Jul 1997. p 213-215

Publication Year: 1997

CODEN: JMMFAM ISSN: 0022-2755

Language: English

Abstract: Cement is a process industry where limestone is the principal raw material. About 70% of **cement production** in eastern India, however, is blast furnace slag cement due to the fact that major steel plants are situated in eastern India and availability of slag at a total landed **cost** is lower than **clinker**. Therefore, the total limestone requirement is lower. Due to this, many of the mines supplying flux-grade limestone to steel plants had to be closed down or had to reduce production since the plants demanded lower alkali and purer limestone which are not available.

36/3,AB/7 (Item 4 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)
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04383095

E.I. No: EIP96043142531
Title: Alternative fuels and their impact on refractory linings
Author: Grosse-Daldrup, Heinrich; Scheubel, Bernd
Corporate Source: Refratechnik GmbH
Source: World Cement v 27 n 3 Mar 1996. 3pp
Publication Year: 1996
CODEN: WOCEDR ISSN: 0263-6050
Language: English

Abstract: The production of Portland blast-furnace cement is a process that requires an extraordinary amount of energy. The total energy costs for cement represent around 40% of the total production costs. In many areas such as Germany, there is constant effort among suppliers to reduce the electrical energy consumption of the various machines. On the other hand, the **cement producers**, are trying on their part, to reduce the absolute costs and specific costs of thermal energy through the use of alternative fuels.

36/3,AB/8 (Item 5 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)
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04025294

E.I. No: EIP94122482652
Title: Use of paper residues in rotary kilns
Author: Ernstbrunner, Ludwig
Corporate Source: Wopfinger Stein- und Kalkwerke, Aust
Source: World Cement v 25 n 9 Sept 1994. p 99-100
Publication Year: 1994
CODEN: WOCEDR ISSN: 0263-6050
Language: English

Abstract: Through the synergy between two completely different industries and the associated decrease in the use of fossil fuels - while at the same time making use of the raw materials contained in the paper residues for producing clinker, as well as saving landfill space and reducing the discharge of NOx - both the brick and paper manufacturing industries believe that they have found a solution which is in the interests of each industry and the environment.

36/3,AB/9 (Item 6 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)
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02650560

E.I. Monthly No: EI8810097109
Title: ERLAEUTERUNGEN ZUR BESTELLUNG UND ANNAHME FEUERSFESTER STEINE UND MASSEN FUER ZEMENT-DREHOEFEN.
Title: Explanatory Comments on the Ordering and Acceptance of Refractory Bricks and Monolithic Refractories for Rotary Cement Kilns.
Author: Moeck, M.
Source: ZKG International, English Translation v 41 n 3 Mar 1988 128-131
Publication Year: 1988
CODEN: ZIETE6 ISSN: 0722-4397

Language: German

Abstract: This article answers questions as to how different forms to rotary kilns construction and fluctuations in kiln operation are liable to affect the durability of refractory products and the **cost** of **clinker production** in **cement** plants. Furthermore, the scope in choosing refractory products is discussed, and it is proposed that the information given in manufacturers' catalogs be made clearer and that specifications be agreed as an integral part of orders. Since most cement plants cannot perform standard quality checks on the refractory materials they receive, a general neutral test on despatch is proposed. (Edited author abstract) In German. 8 refs.

36/3,AB/10 (Item 7 from file: 8)
DIALOG(R)File 8:EI Compendex(R)
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02157909

E.I. Monthly No: EI8701001181

Title: INVESTIGATIONS OF NATURAL POZZOLAN-PORTLAND CEMENT MORTARS IN TANZANIA.

Author: Makange, A. A.; Massawe, N. M.

Corporate Source: Alfi East Africa Ltd

Source: Journal of Ferrocement v 16 n 3 Jul 1986 p 255-262

Publication Year: 1986

CODEN: JOFEDZ ISSN: 0125-1759

Language: ENGLISH

Abstract: Portland-pozzolana cement (PPC) has been prepared by inter-grinding cement clinker gypsum and natural pozzolana. The natural pozzolana (pumice) found in Mbeya-Tanzania, has been established to possess high pozzolanicity of 11. 36 N/mm². It is also established that, the Mbeya pozzolana can replace ordinary portland cement (OPC) by up to 40% by weight without having ill effect on OPC properties at the age of 112 days. At ages under 112 days PPC develops lower strength than that of OPC. For PPC containing more than 40% by weight pozzolana, the strength attained are always lower than that of OPC. In Tanzania, introduction of pozzolana as partial replacement for OPC by 40% by weight would reduce **production costs** of cement-clinker by over 30% and increase production capacity by 40%. (Author abstract) 22 refs.

36/3,AB/11 (Item 8 from file: 8)
DIALOG(R)File 8:EI Compendex(R)
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01988092

E.I. Monthly No: EI8607055467

E.I. Yearly No: EI86014371

Title: RENOVATION AND CONVERSION OF CEMENT PLANTS - AN OVERVIEW.

Author: Taddei, Roger

Corporate Source: Lafarge Coppee Lavalin

Source: World Cement v 17 n 1 Jan-Feb 1986 p 27-30

Publication Year: 1986

CODEN: WOCEDR ISSN: 0263-6050

Language: ENGLISH

Abstract: For more than 20 years the Lafarge Coppee group has had a policy of building and modernizing existing plants with the essential aim of making them more productive and more competitive. Efforts have concentrated on the main aspects involved in the **cost** of producing **clinkers** and cements, and more specifically: energy savings,

productivity, use of additives to the clinker, and reduction of investment costs. The aim has been and will continue to be the **production of cements** with precise chemical and physical properties at the most attractive cost. This article focuses on the technical, aspects of the modernization projects.

36/3,AB/12 (Item 9 from file: 8)
DIALOG(R)File 8:EI Compendex(R)
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01812064

E.I. Monthly No: EI8510086793

E.I. Yearly No: EI85013868

Title: CONSTRUCTION OF NEW **CLINKER PRODUCTION LINE** AT ANTOING, BELGIUM.

Author: Hellofs, Leonard

Corporate Source: Technip, Process Dep, Suresnes, Fr

Source: World Cement v 16 n 1 Jan-Feb 1985 p 3-5

Publication Year: 1985

CODEN: WOCEDR ISSN: 0263-6050

Language: ENGLISH

Abstract: Ever increasing costs of traditional fuels forces **cement producers** to call on new sources of supply and to make necessary investments to replace the existing units with equipment ensuring the reduction of energy consumption. Constructors are thus faced with new problems arising from the use of low grade fuels usually containing elements which are detrimental to both the quality of the clinker and the satisfactory operation of the units. At the same time, the performance of the equipment requires continuous improvement with a view to minimizing specific energy consumption. Refs.

36/3,AB/13 (Item 10 from file: 8)
DIALOG(R)File 8:EI Compendex(R)
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00235637

E.I. Monthly No: EI72X038344

Title: Pollution and the clinker cooler- 1.

Author: JACKSON, W. S.

Source: Pit & Quarry v 64 n 1, 2 July 1971 p 120-3, 48 Aug p 82-6, 96

Publication Year: 1971

CODEN: PIQUA ISSN: 0032-0293

Language: ENGLISH

Abstract: Of all the problems today confronting management in the cement industry, the one whose solution may seem the least rewarding is the problem of abatement of pollution from hundreds of clinker cooler vent stacks. Two- part paper discusses title problem and describes some solutions of the problem. Dust collecting equipment applicable for control of emission from grate- type clinker cooler vents is examined. For the open- plant, the engineer should develop the probable total unit **cost** / bbl of **clinker produced** over the life of proposed equipment and thus arrive at the optimal solution.

36/3,AB/14 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci
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11711590 Genuine Article#: 680JJ Number of References: 0

Title: Operational experience with an RSP Minox Calciner at the Lixhe cement plant (ABSTRACT AVAILABLE)

Author(s): Gastout B; Delcour F

Journal: ZKG INTERNATIONAL, 2003, V56, N4, P64-68

ISSN: 0949-0205 Publication date: 20030000

Publisher: BAUVERLAG GMBH, PRESSEHAUS, AM KLINGENWEG 4A, D-65396 WALLUF, GERMANY

Language: German Document Type: ARTICLE

Abstract: The last wet kiln line of the Lixhe cement works of the CBR group was shut down in 2001 within the framework of a conversion project. The other existing kiln line operating according to the dry process was given a facelift. Due to the conversion of the preheater and the installation of a new calciner type RSP Minox, the plant capacity could be increased from formerly 1 Mta to 1.35 Mta of clinker. In addition to the increase of the plant capacity, the productivity of the works could also be increased due to saving of labour. Furthermore, the **clinker production costs** could be optimized due to the utilization of the maximum possible amount of secondary fuels and, all emissions were reduced thus better discharging the environmental duties. The conversion of all ESP systems into baghouses resulted in a reduction of the dust emissions. Since the beginning of the conversion in July 2001, all goals of the project have been reached or even exceeded.

36/3,AB/15 (Item 2 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

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02491898 Genuine Article#: LE739 Number of References: 2

Title: **COST-EFFECTIVE CLINKER PRODUCTION WITH THE PYROEXPERT OPTIMIZATION SYSTEM** (Abstract Available)

Author(s): BAUER C; JAGER G; KAUFMANN M; PATZER J; WALLEN KH

Corporate Source: HUMBOLDT PROZESSAUTOMAT GMBH/W-5000 COLOGNE 41//GERMANY/

Journal: ZEMENT-KALK-GIPS, 1993, V46, N4 (APR), P182&

ISSN: 0722-4400

Language: GERMAN Document Type: ARTICLE

Abstract: The new PYROEXPERT optimization system ensures greater cost-effectiveness of kiln operation by combining expert technology and process modelling. Examples are used to explain the advanced control concept and the operator interface with graphic configuration based on modern hardware and software components. Illustrations are given of the transparency of the control sequences through the creation of a detailed explanation component, and the experience gained from plants with different kiln throughputs is summarized.

36/3,AB/16 (Item 3 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

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01111391 Genuine Article#: FW874 Number of References: 0

(NO REFS KEYED)

Title: SHELL TEMPERATURE-MEASUREMENTS ON ROTARY KILNS (Abstract Available)

Author(s): SPECHT H

Journal: ZEMENT-KALK-GIPS, 1991, V44, N6, P291-298

Language: GERMAN Document Type: ARTICLE

Abstract: The use of infrared optical measuring methods for non-contact measurement of the thermal radiation from the kiln shell, which is then

used to determine the true temperature, has a history of 30 years of development. The originally slow measurement with pyrometers giving only coarse resolution of location has developed, since the availability of rapid line scanners in the 80s, into real-time shell temperature measurement which uses computer-assisted evaluation to recognize and monitor individual bricks. At costs of DM 2500 to DM 3000 per kiln metre the user now gets not only an operationally reliable instrument for monitoring the shell and the tyre slip but also a kiln diagnosis system for refractory management, for kiln control and for measuring and logging **clinker production costs**.

Modern systems of this type are offered by 7 manufacturers and about 400 installations are already in use worldwide. A review is given of the characteristic properties of these systems. The most important differences in the measuring techniques are to be found in the design and in the working temperature range of the line scanners and in the application-orientated software; the computer side has become largely standardized.

36/3,AB/17 (Item 1 from file: 144)
DIALOG(R)File 144:Pascal
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15885258 PASCAL No.: 03-0023084
Optimising productivity : India and Sri Lanka
PURANMALKA Om Prakesh
Group Executive President, Grasim Industries, Cement Division, India
Journal: World cement, 2002, 33 (11) 21-24 (3 p.)
Language: English
Om Prakesh Puranmalka, Group Executive President, Grasim Industries, Cement Division, India, discusses how to implement a targeted productivity programme.

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36/3,AB/18 (Item 2 from file: 144)
DIALOG(R)File 144:Pascal
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14604503 PASCAL No.: 00-0273174
Betriebskostensenkung beim Klinkerkuehler durch neue Rostplatten,
"Compact Swing" Rostlagerung, "LevelRadar" Schubzahlregelung und
Abwaermenutzung
(Abaissement des couts de fonctionnement du refroidisseur de clinker
grace aux nouvelles plaques de grille, a la suspension de grille "Compact
Swing", a la regulation des poussees avec le "Level Radar" et a la
valorisation de la chaleur de sortie)

(Lowering **clinker** cooler operating **costs** through new grate
plates, "Compact Swing" support of the grate, "LevelRadar" grate speed
control and waste heat recovery)

BRUNET D; MEYER H
Journal: ZKG international, 2000, 53 (4) 216-225 (8 p.)
Language: German Summary Language: English; French; Spanish
La voie la plus efficace pour l'abaissement des couts d'exploitation est
une technique sans usure et sans maintenance. Cet objectif est pris en
compte, par BMH Claudius Peters, par la mise au point de la suspension de
grille "Compact Swing" et d'une nouvelle conduite de la grille, pour les
fonctions principales du refroidisseur L'appel a une technologie moderne
des materiaux permet de reduire l'usure des plaques de grille. Une

amelioration supplementaire se situe dans l'automatisation du refroidisseur de clinker Au moyen d'une mesure directe de la hauteur du lit de clinker, a la glissiere d'entree du refroidisseur, avec le dispositif nomme "LevelRadar", les variations de la sortie du four sont detectees immediatement et regularisees, dans la refroidisseur, par un reglage automatique du nombre de poussees de la grille. Une mesure de la temperature de l'air secondaire, reagissant rapidement et sans deviation, ameliore l'evaluation thermique du refroidisseur de clinker Le systeme de ventilation, eprouve au cours de longues annees et compose d'un module HE et d'une ventilation en arrete de poisson, constitue la base du refroidisseur de clinker A l'aide d'exemples est montre, qu'une combinaison consequente de technique de procede, mecanique et technique de regulation conduit a un abaissement des couts d'exploitation. Dans ce contexte, le concept global de l'installation est aussi important, que les details de construction des plaques de grille ou de la suspension de la grille.

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36/3,AB/19 (Item 3 from file: 144)
DIALOG(R)File 144:Pascal
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14011647 PASCAL No.: 99-0199259
Process optimisation savings
TURNELL V J
Process/Environmental Engineer, Penta Engineering Corp., United States
Journal: World cement, 1999, 30 (3) 91-96, 117-121 (10 p.)
Language: English; Spanish
Victor J. Turnell, P.E., Process/Environmental Engineer, Penta Engineering Corp., USA, explores methods of increasing the value of capital investments by optimising manufacturing processes, increasing production and reducing operating costs.

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36/3,AB/20 (Item 4 from file: 144)
DIALOG(R)File 144:Pascal
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11713906 PASCAL No.: 94-0578122
Advanced control methods ensure **cost-effective clinker production**
BAUER C; JAEGER G; KAUFMANN M; PATZER J; WALLEN K H
Journal: World cement, 1994, 25 (7) 43-46
Language: English
The PYROEXPERT optimization system ensures greater cost-effectiveness of kiln operation by combining expert technology and process modelling. Examples are used to explain the advanced control concept and the operator interface with graphic configuration based on modern hardware and software components. Illustrations are given of the transparency of the control sequences through the creation of a detailed explanation component, and the experience gained from plants with different kiln throughputs is summarized

36/3,AB/21 (Item 1 from file: 315)
DIALOG(R)File 315:ChemEng & Biotec Abs
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508552 CEABA Accession No.: 34-06-000327 DOCUMENT TYPE: Journal
Title: Processing and handling alternative fuels in the cement industry
Orig. Title: Aufbereitung und Handling alternativer Brennstoffe in der
Zementindustrie

AUTHOR: Willitsch, F.W. ; Sturm, G.

JOURNAL: ZKG Int., Volume: 55, Issue: 10, Page(s): 62-69

CODEN: ZIEBEK ISSN: 07224400

PUBLICATION DATE: 2002 (20020000)

ABSTRACT: In order to make the energy-intensive **production** of Portland cement **clinker** more **cost**-effective, alternative fuels are becoming more important in the cement industry. The processing of alternative fuels from refuse or refuse fractions conserves natural resources and shows advantages from waste management aspects, too. The report reviews the most important alternative fuels (waste oils and solvents, contaminated wood and wood production waste, tyres, rubber waste, plastic waste, thermal fraction from domestic refuse, sewage sludge, and animal meal) with their main impurities and calorific values used in the cement industry and presents their processing, handling, and quality control.

ABSTRACT: Die Herstellung von Portlandzementklinker ist energieintensiv. Der praktische Bedarf an thermischer Energie liegt abhaengig vom Verfahren bei ca. 3,2 MJ/kg. Die verwendeten Regelbrennstoffe sind Gas, Heizol, Schwerol, diverse Kohlenarten und Petrolkoks. Die gemeinsame Verbrennung von hoeherwertigem Regelbrennstoff mit minderwertigen Alternativbrennstoffen erlaubt die Einstellung der erforderlichen Heizwerte. Je nach Art des Alternativbrennstoffs koennen Substitutionsgrade bis 80 % und darueber erreicht werden. Ausserdem uebernimmt die Zementindustrie auch eine wichtige Entsorgungsfunktion. Die gebrauchlichsten Alternativbrennstoffe der Zementindustrie Europas gehen aus einer Tabelle hervor. Sie enthaelt auch die moeglichen Verunreinigungen sowie die Heizwerte dieser Stoffe. Als besonders problematisch werden organische Verunreinigungen angesehen. Weitere Ausfuehrungen betreffen die Aufbereitungsverfahren, wobei fuer die Verbrennung die angefuehrten Kriterien zu beachten sind. In der Arbeit geht man eingehend auf die Technologien und auf die Besonderheiten bei der Aufbereitung von Altholz, Reifen, Kunststoffen und Sonderverfahren ein. Aehnlich verfaehrt man bei den Lagerbedingungen fuer eine Aufbereitungsanlage. Es handelt sich um die vorgestellten Eingangslager, Zwischenlager und Endproduktlager. Im 4. Punkt werden Dosierung und Foerderung der unterschiedlichen Alternativbrennstoffe behandelt. Hier muessen ebenfalls bestimmte Bedingungen eingehalten werden. Abschliessend befasst man sich mit der Eingangskontrolle und Analyse. Die dafuer erstellten Spezifikationen haben die aufgrund der geltenden Gesetze und Richtlinien festgelegten Grenzwerte zu beruecksichtigen. Die entnommenen Stichproben werden im Labor analysiert. Bei erfuehlten Einsatzkriterien erfolgt die Uebernahme in das Eingangslager, ansonsten wird das Material an den Lieferanten zurueckgesendet. Weitere Kontrollen beziehen sich auf die Untersuchungen vor dem Einsatz. Diese sind dargelegt worden.

36/3,AB/22 (Item 2 from file: 315)

DIALOG(R)File 315:ChemEng & Biotec Abs

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390274 CEABA Accession Number: 27-08-014698 DOCUMENT TYPE: Journal

Title: Bag-house dust used in clinkerization of portland cements.
AUTHOR: Singh, N.B. ; Bhattacharjee, K.N. ; Shukla, A.K.
CORPORATE SOURCE: Univ. of Gorakhpur Gorakhpur India
JOURNAL: Am. Ceram. Soc. Bull., Volume: 74, Issue: 12, Page(s): 78-83
CODEN: ACSBA7 ISSN: 00027812
PUBLICATION DATE: 1995 (950000) LANGUAGE: English
ABSTRACT:

Production of Ordinary Portland **Cement** (OPC) is increasingly expensive due to the high energy requirement. Waste materials such as bag-house dust (BHD, from electric arc furnace of a calcium carbide plant) can be added during **clinkerization** to reduce overall **cost**. This work looks at the effect of adding 10% BHD to black meal used in vertical shaft kiln clinkerization in a cement plant. The hydration properties of OPC made from control and experimental clinkers were studied. Water consistency, setting times, compressive strength, Le-chatelier expansion and autoclave tests were conducted on samples. Incorporation of 10% BHD led to 2% fuel saving, reduced CO2 emissions and higher output. The blends produced had higher compressive strength without lowering initial strengths. (Moore).

36/3,AB/23 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

015623426

WPI Acc No: 2003-685597/200365

XRFX Acc No: N03-547622

Waste material melting furnace has thermometer embedded into tip of main tuyere that blows oxygen-containing gas into high temperature combustion zone

Patent Assignee: NKK CORP (NIKN)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 2003254525	A	20030910	JP 200258309	A	20020305	200365 B

Priority Applications (No Type Date): JP 200258309 A 20020305

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2003254525	A		6	F23G-005/50	

Abstract (Basic): JP 2003254525 A

Abstract (Basic):

NOVELTY - A thermometer (30) is embedded into the tip of a main tuyere (14), which blows oxygen containing gas into a high temperature combustion zone (51). The combustion zone melts the **residue produced** from heating and thermally decomposing waste material (50). The thermometer measures the temperature of the molten slag in the furnace interior.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for an operation method of a waste material melting furnace.

USE - For melting waste material e.g. municipal solid waste, shredder dust.

ADVANTAGE - Molten slag temperature can be measured accurately and continuously, and can be adjusted exactly and rapidly according to change of heat energy released from waste. Ensures stable operation of furnace, without resulting in excessive temperature rise of furnace. Prolongs furnace durability, thus reducing furnace repair **cost**.

Minimizes adhesion of **clinker** to furnace inner wall. Allows processing of wide variety of wastes.

DESCRIPTION OF DRAWING(S) - The figure is a schematic of a waste material melting furnace. (Drawing includes non-English language text).

Main tuyere (14)
Sub tuyere (15)
Thermometer (30)
Waste material (50)
High temperature combustion zone (51)
pp; 6 DwgNo 1/5

36/3,AB/24 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

015387288

WPI Acc No: 2003-448233/200342

XRPX Acc No: N03-357541 m>~//

Production process monitoring system for cement manufacture, involves displaying computed **clinker production** and **cost** of **clinker** as function of time

Patent Assignee: INVENSYS SYSTEMS INC (INVE-N)

Inventor: HUSSAIN F; RUSSELL M

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20030060993	A1	20030327	US 2000235491	P	20000926	200342 B
			US 2001846899	A	20010501	

Priority Applications (No Type Date): US 2000235491 P 20000926; US 2001846899 A 20010501

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030060993	A1		13	G06F-019/00	Provisional application US 2000235491

Abstract (Basic): US 20030060993 A1

Abstract (Basic):

NOVELTY - The **cost** of **clinker** is calculated based on the **clinker production** which is computed at the kiln output. The computed **clinker production** and **cost** of **clinker** are displayed as functions of time.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

- (1) kiln efficiency measuring system;
- (2) finish mill efficiency measuring system; and
- (3) **cement production** process control system.

USE - For monitoring **production** process in **cement** manufacturing system.

ADVANTAGE - Improves plant operation performance to achieve maximum **clinker** quality and **production** at minimal cost.

DESCRIPTION OF DRAWING(S) - The figure illustrates a display screen displaying the dynamic performance measures for **cement production** process.

pp; 13 DwgNo 2/3

36/3,AB/25 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

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011845480

WPI Acc No: 1998-262390/199824

XRAM Acc No: C98-081532

Low cost high throughput **cement clinker production** -
by mixing acidic and basic components with different raw material
fractions before grinding

Patent Assignee: LOERKE A (LOER-I); LOERKE P (LOER-I)

Inventor: LOERKE A; LOERKE P

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
DE 19645379	A1	19980507	DE 1045379	A	19961104	199824 B

Priority Applications (No Type Date): DE 1045379 A 19961104

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 19645379	A1		12	C04B-007/52	Add to patent DE 19540996

Abstract (Basic): DE 19645379 A

A wet and dry process for producing cement clinker from basic and acidic raw material components, involving drying, grinding, mixing and thermal treatment stages of preheating, calcining, sintering and cooling, comprises using: (a) a marl raw material having a 0.01-80 mu m to 80.01-2000 mu m particle class ratio of 1.5:1 to 1:9; (b) an acidic raw material component, which is to be ground finely to below 80 mu m size, supplied to the 0.01-80 mu m particle class fraction of the raw material, in addition to the incoming finely ground coal ash, in an amount which ensures a modulus 'n' defined by the relation (1) of 1.1-1.5 in this 0.01-80 mu m particle class fraction and the requisite SM and/or TM of the entire raw material; and (c) limestone, which is to be ground to 40-90% residue on a 80 mu m sieve, supplied to the 80-2000 mu m particle class fraction of the entire raw material in an amount depending on the requisite KSt II of the raw material.

$$(\text{CaO} + \text{MgO} + \text{FeO} + 0.31\text{Fe}_3\text{O}_4 - 0.92\text{Al}_2\text{O}_3 - 0.81\text{Fe}_2\text{O}_3) \text{ divided by } \text{SiO}_2 \text{ (1)}$$

Also claimed are (i) a method of optimising the fractional particle size composition of raw material for **cement clinker production**; and (ii) a method of producing cement clinker from basic and acidic raw material components.

ADVANTAGE - The energy, operating and investment costs for raw material grinding are further reduced and the throughput of the raw material equipment and the kiln are further increased, while reducing the fuel requirements.

Dwg.0/0

36/3,AB/26 (Item 4 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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011455532

WPI Acc No: 1997-433439/199740

XRAM Acc No: C97-138934

Starting mixture for **production of Portland cement clinker** - contains clayey, iron-containing and limestone component, and sludge-waste from metal-plating industry

Patent Assignee: SHEVTSOV A M (SHEV-I)

Inventor: SHEVTSOV A M; TKACHENKO V YU

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
RU 2074135	C1	19970227	RU 96108119	A	19960426	199740 B

Priority Applications (No Type Date): RU 96108119 A 19960426

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
RU 2074135	C1		3	C04B-007/42	

Abstract (Basic): RU 2074135 C

Starting mixture, including clayey, limestone and iron-containing components, and sludge-waste from metal processing plants, contains the latter in form of sludge-waste from metal-plating processes (I). Ratio of components (weight%) is clayey component 9-25, iron-containing component 2-4, (I) 0.1-12 and balance limestone component.

USE - In building materials industry, as starting mixture for **production of Portland cement clinker**.

ADVANTAGE - Mixture increases range of starting materials, reduces **cost** of Portland cement **clinker** owing to utilisation of industrial waste, and ensures its required hydration activity.

Dwg.0/0

36/3,AB/27 (Item 5 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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011455531

WPI Acc No: 1997-433438/199740

XRAM Acc No: C97-138933

Starting mixture for **production** of Portland **cement**

clinker - contains clayey, iron-containing and limestone component, and deposit from shower effluents purification plant

Patent Assignee: SHEVTSOV A M (SHEV-I)

Inventor: SHEVTSOV A M; TKACHENKO V YU

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
RU 2074134	C1	19970227	RU 96108117	A	19960426	199740 B

Priority Applications (No Type Date): RU 96108117 A 19960426

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
RU 2074134	C1		3	C04B-007/42	

Abstract (Basic): RU 2074134 C

Starting mixture, including clayey, limestone and iron-containing components, and the deposit from shower effluents purification plant equipment (I), at ratio of components (weight%): clayey component 5-25, iron-containing component 2.1-4.5, (I) 0.1-15 and balance limestone component.

USE - In building materials industry, as starting mixture for **production of Portland cement clinker**.

ADVANTAGE - Mixture increases range of starting materials, reduces **cost** of Portland cement **clinker** owing to utilisation of industrial waste, and ensures its required hydration activity.

Dwg.0/0

36/3,AB/28 (Item 1 from file: 347)

DIALOG(R)File 347:JAPIO
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05686966

POROUS SPINEL CLINKER AND ITS PRODUCTION

PUB. NO.: 09-301766 [JP 9301766 A]
PUBLISHED: November 25, 1997 (19971125)
INVENTOR(s): HAGIWARA HIROSHI
MURATA HOUSUKE
APPLICANT(s): OOMURA TAIKA KK [0000000] (A Japanese Company or Corporation),
JP (Japan)
APPL. NO.: 08-151498 [JP 96151498]
FILED: May 09, 1996 (19960509)

ABSTRACT

PROBLEM TO BE SOLVED: To obtain low-**cost** porous spinel **clinker** having high heat insulating property because of many pores and excellent in corrosion resistance because of many closed pores while effectively utilizing aluminum ash.

SOLUTION: Aluminum ash as principal starting material or a mixture of the ash with aluminum hydroxide and/or alumina, magnesium hydroxide and/or magnesia or both of them is fired optionally after pulverization to produce the objective porous spinel clinker made of a fired body having $\geq 3.0\%$ closed porosity and $\geq 10\%$ apparent porosity. This spinel clinker is a fireproof material having high heat insulating property, excellent in corrosion resistance and very useful as stock for producing refractories such as a furnace material and brick

36/3,AB/29 (Item 2 from file: 347)
DIALOG(R)File 347:JAPIO
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04975099

PRODUCTION OF CEMENT

PUB. NO.: 07-267699 [JP 7267699 A]
PUBLISHED: October 17, 1995 (19951017)
INVENTOR(s): NAGANO KENICHI
ITO MITSUHIRO
APPLICANT(s): CHICHIBU ONODA CEMENT CORP [000024] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 06-090435 [JP 9490435]
FILED: March 24, 1994 (19940324)

ABSTRACT

PURPOSE: To provide a method for producing cement designed to reduce **clinker** grinding **cost** through such procedures that clinker is taken from the downstream side of a kiln and ground under specified conditions followed by measuring the granular size characteristics of the ground **product** and dividing **clinker** grindability into coarse grindability and fine grindability to respectively evaluate them individually.

CONSTITUTION: Firstly, a cement feedstock 1, a formulation comprising limestone, clay, silica rock and iron material, is converted into cement clinker 1 as an intermediate product 30 through a firing process 20 equipped with a kiln with a suspension preheater and a cooler, etc. Next, the cement clinker 1 is taken from the downstream side of the firing

process 20, namely, from the upstream side of the finishing process 40, and the grindability of the cement clinker 1 is divided into coarse grindability and fine grindability to respectively evaluate them individually. Based on the resultant evaluation 60, the kiln operating conditions in the firing process 20 such as the amounts of fuel and air for the kiln burner, number of kiln revolutions and air flow in the kiln are controlled. The **clinker 1** produced in this controlled firing process 20 is ground and trimmed together with gypsum in the finishing process 40 equipped with a grinder and a classifier, and the resultant cement is shipped as the final product 50.

36/3,AB/30 (Item 3 from file: 347)
DIALOG(R)File 347:JAPIO
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03216940

PRODUCTION OF CEMENT CLINKER

PUB. NO.: 02-192440 [JP 2192440 A]
PUBLISHED: July 30, 1990 (19900730)
INVENTOR(s): AKEKI SEIJI
SATAKUNI YASUHIKO
APPLICANT(s): UBE IND LTD [000020] (A Japanese Company or Corporation), JP
(Japan)
APPL. NO.: 01-012268 [JP 8912268]
FILED: January 20, 1989 (19890120)
JOURNAL: Section: C, Section Number 769, Volume 14, Number 470, Pg. 47,
October 15, 1990 (19901015)

ABSTRACT

PURPOSE: To obtain a cement **clinker** having low **cost** using a slag produced as a by-product as a main raw material while carrying out effective utilization of retaining heat of the slug by adding and blending a cement clinker raw material in state retaining temperature of the slag to a specific value or above with the slag produced as a by-product in high-temperature state in a metal refining process and burning and cooling the resultant blend.

CONSTITUTION: A cement clinker raw material is added and blended in state retaining temperature of slag to ≥ 600 deg.C with a slag produced as a by-product in high-temperature state in a metal refining process and the resultant blend is burned and then cooled. As the above-mentioned slag, blast furnace produced as a by-product in iron refining process is preferably used. A lime raw material, silica raw material or iron oxide raw material is preferably used as the cement clinker raw material in using the blast furnace

36/3,AB/31 (Item 4 from file: 347)
DIALOG(R)File 347:JAPIO
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03112920

PRODUCTION OF SPINEL CLINKER

PUB. NO.: 02-088420 [JP 2088420 A]
PUBLISHED: March 28, 1990 (19900328)
INVENTOR(s): ODA YASUYOSHI
KATO YUKIO

APPLICANT(s): SHIN NIPPON KAGAKU KOGYO CO LTD [351135] (A Japanese Company
or Corporation), JP (Japan)
APPL. NO.: 63-239756 [JP 88239756]
FILED: September 27, 1988 (19880927)
JOURNAL: Section: C, Section Number 730, Volume 14, Number 284, Pg. 55, June
20, 1990 (19900620)

ABSTRACT

PURPOSE: To obtain high quality and high density spinel **clinker** at a low **cost** by using alumina and magnesium hydroxide each having specified properties of particles as starting materials.

CONSTITUTION: When alumina is mixed with magnesium hydroxide and calcined to **produce** spinel **clinker**, alumina having $\geq 2.5 \text{ m}^2/\text{g}$ specific surface area and containing $\geq 60 \text{ wt.}\%$ particles of $\leq 5 \mu\text{m}$ particle size and magnesium hydroxide containing $\geq 90 \text{ wt.}\%$ particles of $\leq 10 \mu\text{m}$ particle size are used as starting materials.

39/3,AB/1 (Item 1 from file: 8)
DIALOG(R) File 8: Ei Compendex(R)
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04617349

E.I. No: EIP97023520547

Title: Heavy metal outputs from a cement kiln co-fired with hazardous waste fuels

Author: Guo, Qizhong; Eckert, James O. Jr.

Corporate Source: State Univ of New Jersey, Piscataway, NJ, USA
Source: Journal of Hazardous Materials v 51 n 1-3 Nov 1996. p 47-65
Publication Year: 1996
CODEN: JHMAD9
Language: English

Abstract: Measured data from a kiln equilibration test are analyzed for heavy metal outputs from a cement kiln co-fired with hazardous waste fuels. Metal outputs from stack emissions, cement kiln dust and cement clinker are considered. Equations are derived for predicting all three metal outputs at any hazardous waste feed rate under steady state conditions. Through analysis of two steady state conditions, at the beginning and end of the equilibration test, essentially the same ratios of metal feed rates are found to be distributed to the kiln dust at either high or low metal feed rates. Applying the same distribution ratios in the derived equations, metal concentrations of wasted kiln dust are predicted when the kiln is not using hazardous waste fuels. Measured concentrations of arsenic, beryllium, cadmium, chromium, and lead in wasted kiln dust, at the highest intended hazardous waste feed rates to the kiln, are 68, 10, 72, 18, and 68 times those predicted for feed rates with no hazardous waste. In addition, the intermediate, non-steady state segment of the equilibration test is analyzed. If metals are assumed not to accumulate in the kiln, the intermediate metal concentrations in cement clinker are predicted to be substantially higher than those at the final steady state. (Author abstract) 12 Refs.

39/3,AB/2 (Item 2 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)
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01838740

E.I. Monthly No: EI8512117206
E.I. Yearly No: EI85046792
Title: SUCCESSFUL HANDLING OF ALTERNATIVE FUELS.
Author: Kaldeway, F.
Corporate Source: Beumer Maschinenfabrik, Beckum, West Ger
Source: World Cement v 16 n 9 Nov 1985 p 344-346
Publication Year: 1985
CODEN: WOCEDR ISSN: 0263-6050
Language: ENGLISH

Abstract: The achievement of pollution-free combustion of industrial waste materials - especially scrap motor tyres and shredded rubber waste - is a much explored subject. The firing of such alternative fuels should not increase the emission of noxious substances into the atmosphere where sophisticated filter systems are already employed. Attention must, however, also be given to handling methods for improved efficiency. In particular equipment that allows a high degree of automated operation is most desirable because waste-derived fuels present considerable difficulties when it comes to maintaining an accurately controlled feed rate. This article reviews the various stages in a practical automated handling installation which has proved efficient for motor tyres and shredded rubber waste. 4 refs.

39/3,AB/3 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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015863288

WPI Acc No: 2004-021119/200402

Related WPI Acc No: 2002-488441; 2003-091724; 2003-899551

XRAM Acc No: C04-006672

XRPX Acc No: N04-016192

Fueling coal burner of power plant involves mixing organic waste, at least one coal combustion by-product, and at least one alkaline additive, combining the mixture with **coal**, and **feeding** the mixture and **coal** into coal burner

Patent Assignee: FAULMANN E L (FAUL-I); LOGAN T J (LOGA-I)

Inventor: FAULMANN E L; LOGAN T J

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20030196578	A1	20031023	US 2001839112	A	20010423	200402 B
			US 200234118	A	20020103	
			US 2003441082	A	20030520	

Priority Applications (No Type Date): US 200234118 A 20020103; US

2001839112 A 20010423; US 2003441082 A 20030520

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030196578	A1		10	F23D-001/00	CIP of application US 2001839112
					Cont of application US 200234118
					CIP of patent US 6405664

Abstract (Basic): US 20030196578 A1

Abstract (Basic):

NOVELTY - Fueling coal burner of power plant involves mixing organic waste, at least one coal combustion by-product, and at least one alkaline additive to form organic waste/coal combustion by-product/alkaline additive mixture having solids content of at least 50%; combining organic waste/coal combustion by-product/alkaline additive mixture with **coal**; and **feeding** mixture and **coal** into coal burner of coal burning power plant.

DETAILED DESCRIPTION - Fueling coal burner (18) of power plant involves mixing organic waste, at least one coal combustion by-product, and at least one alkaline additive to form organic waste/coal combustion by-product/alkaline additive mixture having solids content of at least 50%; combining organic waste/coal combustion by-product/alkaline additive mixture with **coal**; and **feeding** mixture and **coal** into coal burner of coal burning power plant.

USE - The process is used for fueling a coal burner of a power plant.

ADVANTAGE - The invention reduces or eliminates the excess cooling step in present power plants because the heat is used directly in the treatment of organic waste.

DESCRIPTION OF DRAWING(S) - The figure is a flow diagram of the organic **waste** mixing and **fuel** feed system.

Source of organic waste (12)

Source of coal combustion by-products (13)

Source of alkaline additives (14)

Mixer (15)

Coal burner (18)

pp; 10 DwgNo 2/2

39/3,AB/4 (Item 2 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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015837347

WPI Acc No: 2003-899551/200382

Related WPI Acc No: 2002-488441; 2003-091724; 2004-021119

XRAM Acc No: C03-255842

Coal burner feedstock comprises **coal** and mixture of organic waste/coal combustion by-product/alkaline additive

Patent Assignee: FAULMANN E L (FAUL-I); LOGAN T J (LOGA-I)

Inventor: FAULMANN E L; LOGAN T J

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20030192234	A1	20031016	US 2001839112	A	20010423	200382 B
			US 200234118	A	20020103	
			US 2003441116	A	20030520	

Priority Applications (No Type Date): US 200234118 A 20020103; US 2001839112 A 20010423; US 2003441116 A 20030520

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030192234	A1		10	C10L-005/00	CIP of application US 2001839112
					Div ex application US 200234118
					CIP of patent US 6405664

Abstract (Basic): US 20030192234 A1

Abstract (Basic):

NOVELTY - A **coal burner feedstock** comprises **coal** and a mixture of organic waste/coal combustion by-product/alkaline additive formed by mixing organic waste, coal combustion by-product(s) and alkaline additive(s) to form a mixture having a solids content of at least 50%; and combining the organic waste/coal combustion by-product/alkaline additive mixture with coal.

USE - As **coal burner feedstock**.

ADVANTAGE - When organic waste is mixed with coal combustion by-products and optionally alkaline additive(s), ammonia in the organic waste may be converted to free gaseous ammonia without the need for drying the mixture.

DESCRIPTION OF DRAWING(S) - The figure shows a flow diagram of an organic waste drying and fuel feed system of the invention.

Organic waste source (1)
Coal combustion by-product waste source (2)
Mixer (3)
Dryer (4)
Power plant waste heat (5)
Coal burner (6)
Liberated ammonia stream (7)
Feed stream (8)
Coal feed (9)
Sorbent (10)
Steam turbine (11)
pp; 10 DwgNo 1/2

39/3,AB/5 (Item 3 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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013707670

WPI Acc No: 2001-191894/200120

XRAM Acc No: C01-057644

XRPX Acc No: N01-136433

Drying of coal in coke ovens involves circulating and re-using exhaust gas from fluidized bed dryer as feed gas when flue exhaust gas from coke oven is interrupted or reduced

Patent Assignee: NIPPON STEEL CORP (YAWA); SHIN NIPPON SEITETSU KK (YAWA)

Inventor: FUKUNAGA M; KOBAYASHI J; SHIHARA Y; SUGIYAMA I; YOKOMIZO M

Number of Countries: 006 Number of Patents: 008

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
AU 200053506	A	20010222	AU 200053506	A	20000818	200120 B
JP 2001055582	A	20010227	JP 99231045	A	19990818	200128
ZA 200004212	A	20010425	ZA 20004212	A	20000817	200128
CN 1285388	A	20010228	CN 2000124159	A	20000818	200131
KR 2001067082	A	20010712	KR 200047550	A	20000817	200202
AU 746076	B	20020411	AU 200053506	A	20000818	200237
TW 491888	A	20020621	TW 2000116655	A	20000817	200323
KR 360223	B	20021111	KR 200047550	A	20000817	200330

Priority Applications (No Type Date): JP 99231045 A 19990818

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
AU 200053506	A	52		F26B-003/084	
JP 2001055582	A	15		C10B-057/10	
ZA 200004212	A	51		C10B-000/00	
CN 1285388	A			C10B-057/10	
KR 2001067082	A			C10B-057/10	
AU 746076	B			F26B-003/084	Previous Publ. patent AU 200053506
TW 491888	A			C10B-057/10	
KR 360223	B			C10B-057/10	Previous Publ. patent KR 2001067082

Abstract (Basic): AU 200053506 A

Abstract (Basic):

NOVELTY - Coal is dried by a fluidized bed dryer using exhaust gas from coke ovens at least as a portion of a feed gas. When the supply of flue exhaust gas from coke ovens is interrupted or reduced, an exhaust gas from the dryer is circulated and reused.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for;

(1) An apparatus for drying coal, comprising a fluidized bed dryer, a gas pipe for supplying some or all of the flue exhaust gas from coke ovens to the dryer, a gas circulation pipe for circulating and supplying a gas exhausted from the dryer back to the dryer, and a gas circulation system controller; and

(2) Dried coal produced by the above method.

USE - For drying coal for coke ovens.

ADVANTAGE - The inventive method dries coal even during the combustion changeover of coke ovens. It prevents the condensation of moisture in the exhaust gas coming from the dryer, and the excessive coal drying during the start of the dryer's operation. It suppresses the emissions of fine coal from the dryer, and improves the quality of coke.

pp; 52 DwgNo 0/8

? S S5 AND S9

342581 S5

3425 S9

S40 1072 S5 AND S9

? S S40 AND S2

1072 S40

30396 S2

S41 202 S40 AND S2

? S S41 AND S10

202 S41

306 S10

S42 2 S41 AND S10

? TA

>>>No matching display code(s) found in file(s): 65

42/3,AB/1 (Item 1 from file: 8)

DIALOG(R)File 8:EI Compendex(R)

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02832673

E.I. Monthly No: EI8912126654

Title: Aalborg Portland converts to the semi-dry process.

Author: Borgholm, Hans E.; Nielsen, Peter B.

Corporate Source: Aalborg Portland A/S, Aalborg, Den

Source: IEEE Transactions on Industry Applications v 25 n 3 May-Jun 1989

p 486-494

Publication Year: 1989

CODEN: ITIACR ISSN: 0093-9994

Language: English

Abstract: The investigations and tests made before deciding on the construction of a new 4400-STPD semi-dry **cement clinker production** system, which eliminates the traditional predrying of slurry in filter presses, are described. The new system incorporates a drying installation in which a chalk/sand slurry containing approximately 30% water is mixed with fly ash and dried to **raw meal** in two drier crushers using hot exhaust gas from the subsequent precalcining kiln system. A special feature of the kiln installation is the design of the two calciners, in which the combustion temperature can be controlled independently of the temperature and degree of calcination of the **raw meal** which is fed to the rotary kiln. This facilitates the use of low-volatile coals as well as pet coke. Estimated operational data for the new system are included. The net heat consumption of the entire system is estimated at less than 3.70 MBtu/ST **clinker**. 3 Refs.

42/3,AB/2 (Item 2 from file: 8)

DIALOG(R)File 8:EI Compendex(R)

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01570720

E.I. Monthly No: EI8410100444

E.I. Yearly No: EI84015335

Title: BURNABILITY BASED ON PROCESS PARAMETERS FOR BETTER **CLINKER PRODUCTION**.

Author: Anon

Source: Cem Res Inst India Res Bull RB 25-83 Jul 1983 28p

Publication Year: 1983

CODEN: CRIRDX ISSN: 0377-8460

Language: ENGLISH

Abstract: The report discusses a study into a typical case of poor burning with severe constraints on moduli manipulation, through a scientific approach to the burning problem. Several process parameters, such as material movement in the kiln, temperature profile of material, gas flows and theoretical heat requirement have a direct bearing on the complex parameter 'burnability', relevant to the particular kiln. These process parameters have been worked out after suitable plant studies. Particularly, the movement of material down the **kiln**, from the **slurry** stage to **clinkerization**, has been studied for the first time in India using

radiotracer technique. The burnability of **raw meal** has been assessed under normal working conditions of the kiln and suitable alterations in reactivity have been carried out thereto using a suitable mineralizer. Such an integrated approach to **raw meal** preparation and kiln operation resulted in better level of **clinker production** and granulometry of **clinker**. Refs.

46/3,AB/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC
(c) 2004 Institution of Electrical Engineers. All rts. reserv.

7290779 INSPEC Abstract Number: B2002-07-8670-009, C2002-07-3350N-004
Title: The Kosmosdale expansion project [**cement** plant upgrade]
Author(s): Rowley, A.; Babel, D.
Conference Title: IEEE-IAS/PCS 2002 Cement Industry Technical Conference.
Conference Record (Cat. No.02CH37282) p.151-67
Publisher: IEEE, Piscataway, NJ, USA
Publication Date: 2002 Country of Publication: USA 360 pp.
ISBN: 0 7803 7254 9 Material Identity Number: XX-2002-01640
U.S. Copyright Clearance Center Code: 0-7803-7254-9/02/\$10.00
Conference Title: IEEE-IAS/PCA 2002 Cement Industry Technical Conference.
Conference Record
Conference Date: 5-9 May 2002 Conference Location: Jacksonville, FL,
USA

Language: English
Abstract: Kosmos **Cement** Company, a partnership between Southdown (now CEMEX, responsible for operation) and Lonestar Industries (now Heidelberger) decided in 1998 to increase the **clinker production** of the Kosmosdale plant from 2500 stpd to 4700 stpd. To achieve this capacity increase of almost 90%, extensive additions and modifications had to be made in almost all manufacturing areas. These main areas were the quarry stockpile stacker and river load out conveying, a new higher capacity rock barge fleet, upgrades to the limestone unloading conveying system, limestone storage, **raw meal** transport, **kiln feed** system, pyro-process system, coal grinding, **clinker** handling, finish grinding system, **cement** storage and barge loading system, an addition to the main electrical substation and a new plant wide control PLC/HMI automation system. The paper describes the many challenges to execute this unique project in tight and restricted areas while at the same time maintain ongoing plant operation. Only a three month general plant shut down was scheduled for demolition and replacement of the existing gyro-process equipment and tie-ins of the various areas into the existing systems. Due to the time constraints this paper concentrates mainly on the pyro-process area.

Subfile: B C
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46/3,AB/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC
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6306733 INSPEC Abstract Number: B1999-09-7320W-003
Title: New digital flow meter technology benefits **cement** manufacturers
Author(s): Calvino, G.T.; Hardin, D.
Author Affiliation: K-Tron Hasler, Pitman, NJ, USA
Conference Title: 1999 IEEE/-IAS/PCA Cement Industry Technical Conference. Conference Record (Cat. No.99CH36335) p.151-64
Publisher: IEEE, Piscataway, NJ, USA
Publication Date: 1999 Country of Publication: USA 429 pp.
ISBN: 0 7803 5523 7 Material Identity Number: XX-1999-00125
U.S. Copyright Clearance Center Code: 0 7803 5523 7/99/\$10.00
Conference Title: Proceedings of 41st Cement Industry Technical Conference
Conference Date: 11-15 April 1999 Conference Location: Roanoke, VA,
USA

Language: English

Abstract: The importance of weighing technology in **cement** processing cannot be understated, both in terms of maintaining control of the process and the resultant quality of the product. The need to meet stringent quality specifications, operate plants efficiently, and reduce downtime are driving **cement producers** to apply the latest technologies to plant management. Any definition of an ideal solids flow measuring device must not only include high performance accuracy, but must also encompass attributes that center on simplicity of design, long term operational stability, low or no maintenance, insensitivity to ambient conditions, durability, and the ability to zero without interruption of the process. Expert control systems depend on reliable data from the process to manage the **kiln**. Weighing and **feeding** operations provide crucial measurement and control parameters in **cement production** and the expert control systems that govern and regulate the process. Weighing and feeding is central to raw recipe formulation, **cement** reject measurement, **kiln** firing, and **kiln feeding** of **raw meal**. Weighing operations provide the means to measure process conditions, determine needed adjustments, and maintain accurate records of material usage and production. Plant operating efficiency simply cannot be maximized without the most accurate, stable and reliable weighing/feeding systems. This paper presents a new approach to all-digital flow meter design, beginning with a description of its underlying weighing technology, moving to a description of the meter's operating principle, and case studies of its application in **cement** plants.

Subfile: B

Copyright 1999, IEE

46/3,AB/3 (Item 3 from file: 2)

DIALOG(R)File 2:INSPEC

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5520905 INSPEC Abstract Number: C9704-7480-167

Title: An expert system for rotary kiln control

Author(s): Devedzic, V.B.

Author Affiliation: Dept. of Autom. & Control, Mihailo Pupin Inst., Belgrade, Yugoslavia

Conference Title: The First World Congress on Intelligent Manufacturing Processes and Systems. Proceedings Part vol.2 p.920-9 vol.2

Publisher: Univ. Puerto Rico, San Juan, Puerto Rico

Publication Date: 1995 Country of Publication: Puerto Rico 2 vol. (xii+xx+1399) pp.

Material Identity Number: XX97-00420

Conference Title: Proceedings of 1st World Congress on Intelligent Manufacturing Processes and Systems

Conference Sponsor: Int. Inst. Production Eng. Res.; IEEE

Conference Date: 13-17 Feb. 1995 Conference Location: Mayaguez/San Juan, Puerto Rico

Language: English

Abstract: The paper describes an expert system for real-time control of rotary **cement** kiln operation. Rotary kiln is the central and the most complex component of **cement production** process. Its task is to take an appropriate mixture of input material ("**raw meal**"), and to gradually burn and bake it to **produce clinker**, coarse-grained pieces of **cement** which are then transported away from the kiln and milled in a special mill to get the **cement dust**. The **kiln** itself is a complex cylindrical device, consuming fuel to get preheated to a high temperature necessary to **produce clinker**. It rotates around its axis and the **raw meal** dust

sticks adhesively to its walls, thus getting burned and baked. To control the kiln operation successfully, a number of measurements must be performed continuously in real-time, and a number of control signals (i.e. setpoint variables) must be generated simultaneously. It is not always possible to use classical control algorithms to handle this problem appropriately. Many input variables change asynchronously over time and may generate disturbance in the normal operation. It requires substantial knowledge and experience from the operator in order to keep the kiln operation smooth enough. Therefore, we developed a real-time expert system to perform the task of kiln operation control. The system is based on a previously developed methodology for building real-time expert systems. The paper overviews the methodology, describes the problem domain in detail, and discusses some important design decisions and implementation details of our expert system.

Subfile: C

Copyright 1997, IEE

46/3,AB/4 (Item 4 from file: 2)

DIALOG(R)File 2:INSPEC

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5099349 INSPEC Abstract Number: C9512-7420-036

Title: Knowledge-based control of rotary kiln

Author(s): Devedzic, V.

Author Affiliation: Dept. of Autom. & Control, Mihailo Pupin Inst., Belgrade, Yugoslavia

Conference Title: 1995 International IEEE/IAS Conference on Industrial Automation and Control: Emerging Technologies (Cat. No.95TH8070) p.452-8

Publisher: IEEE, New York, NY, USA

Publication Date: 1995 Country of Publication: USA xiii+778 pp.

ISBN: 0 7803 2645 8

Conference Title: Proceedings IEEE Conference on Industrial Automation and Control Emerging Technology Applications

Conference Sponsor: IEEE Ind. Applications Soc.; Nat. Taipei Inst. Technol

Conference Date: 22-27 May 1995 Conference Location: Taipei, Taiwan

Language: English

Abstract: The paper describes an expert system for real-time control of rotary **cement** kiln operation. Rotary kiln is the central and the most complex component of **cement production** process. Its task is to take an appropriate mixture of input material ("**raw meal**"), and to gradually burn and bake it to **produce clinker**, coarse-grained pieces of **cement** which are then transported away from the kiln and milled in a special mill to get the **cement dust**. The **kiln** itself is a complex cylindrical device, consuming fuel to get preheated to a high temperature necessary to **produce clinker**. It rotates around its axis and the **raw meal** dust sticks adhesively to its walls, thus getting burned and baked. To control the kiln operation successfully, a number of measurements must be performed continuously in real-time, and a number of control signals (i.e. setpoint variables) must be generated simultaneously. It is not always possible to use classical control algorithms to handle this problem appropriately. Many input variables change asynchronously over time and may generate disturbance in the normal operation. It requires substantial knowledge and experience from the operator in order to keep the kiln operation smooth enough. Therefore, we developed a real-time expert system to perform the task of kiln operation control. The system is based on a previously developed methodology for building real-time expert systems. The paper overviews the methodology, describes the problem domain in detail, and

discusses some important design decisions and implementation details of our expert system.

Subfile: C

Copyright 1995, IEE

46/3,AB/5 (Item 5 from file: 2)

DIALOG(R)File 2:INSPEC

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03638169 INSPEC Abstract Number: C90042409

Title: Laboratory automation in a **cement** plant

Author(s): Sheth, S.; Brady, P.A.

Author Affiliation: RMC Lonestar, Davenport, CA, USA

Journal: American Ceramic Society Bulletin vol.69, no.1 p.93-9, 106

Publication Date: Jan. 1990 Country of Publication: USA

CODEN: ACSBA7 ISSN: 0002-7812

Language: English

Abstract: A continuing trend in the **cement** industry has been to concentrate manufacturing in a smaller number of larger-capacity production systems. To realize the benefits of the economies of scale inherent in the larger production units, a basic requirement is to provide the kiln system with a constant feed material of the correct chemical mix composition for the desired **clinker** that is being **produced**. To ensure a consistent **kiln feed**, stringent quality control must be applied in the preparation of the **raw meal**. Monitoring and control of the production of **raw meal** can only be practically achieved by analyzing samples in the laboratory. For online control of **raw meal** production, the laboratory is at the center of the circuit for quality control within the production cycle. The authors describe the details of such a system and go on to look at the design and implementation of an actual lab automation system in a **cement** plant. It consists of three stages: plant sampling station, integrated laboratory station and sample analysis and control area.

Subfile: C

46/3,AB/6 (Item 1 from file: 8)

DIALOG(R)File 8:EI Compendex(R)

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05870009

E.I. No: EIP01306591273

Title: Online-qualitätskontrolle von rohmaterial-massenströmen mit hilfe der PGNA-technik

Title: On-line quality control of raw material flows with the PGNA technique

Author: Rott, C.

Corporate Source: Thermo Gamma-Metrics Europe, Cologne, Germany

Source: Aufbereitungs-Technik/Mineral Processing v 42 n 5 May 2001..p 236-242

Publication Year: 2001

CODEN: AUFTAK ISSN: 1443-9302

Language: German; English

Abstract: The quality assessment of large flows of bulk materials is generally associated with a complex sampling procedure, sample preparation and analysis as well as high labour costs. Decisive improvements in the quality of the assessment of bulk materials and process control, for example in the **cement** industry and coal mining, could be achieved by the introduction of the PGNA on-line measurement technique. The use of

Thermo Gamma-Metrics CrossBelt Analyzers in **cement production**, for charging blending beds or control of the raw blend in front of the raw mill for example, can effect a considerable improvement in the homogeneity of the **raw meal** for the **kiln feed**. The beneficial effects on the entire production process and the product quality associated with this improvement are demonstrably linked to a considerable economic advantage. 10 Refs.

46/3,AB/7 (Item 2 from file: 8)
DIALOG(R)File 8: Ei Compendex(R)
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05445768

E.I. No: EIP99124956661
Title: Ein automatisches Probenahmesystem fuer die Bindemittelindustrie
Title: Automatic sampling system for the binder industry
Author: Schneider, Uwe
Corporate Source: Zementwerk Bosenberg, Ahlen, Ger
Source: Aufbereitungs-Technik/Mineral Processing v 40 n 9 1999. p 420-425
Publication Year: 1999
CODEN: AUFTAK ISSN: 1443-9302
Language: English; German
Abstract: Taking the example of a **cement works**, this paper describes the functions of a process control system for the determination, inspection and assurance of product quality. Particularly important in the context of this example is the sampling of the individual starting materials and of both the intermediate and end-products. In the example, the automatic sample collection and preparation system has been extended with the POLAB AMT analysis system. This enables 24-hour monitoring of the quality of the **raw meal**, the **kiln feed** and the **cement product** throughout all stages in the production process.
(Author abstract) 1 Refs.

46/3,AB/8 (Item 3 from file: 8)
DIALOG(R)File 8: Ei Compendex(R)
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02649945

E.I. Monthly No: EI8810093320
Title: VERWENDUNG VON KOHLESCHIEFER ALS ROHSTOFF-KOMPONENTE IN DER APMC-VORCALCINIERANLAGE IN RAWANG, MALAYSIA.
Title: APMC 4,000 Tonne/Day Precalciner Plant at Rawang, Malaysia Using Carbonaceous Shale as the Secondary Raw Material.
Author: Chen, N. S.; Davis, Ph.
Publication Year: 1986
CODEN: ZIETE6 ISSN: 0722-4397
Language: German
Abstract: This paper describes the 4. 000 t/day precalciner kiln at Rawang, Malaysia. It gives operating experience and details of modification implemented to achieve full and effective production. Limestone and the secondary raw material, a carbonaceous shale blended with iron-rich clay and iron oxide, are ground in separate raw mills. The limestone **raw meal** is fed separately after blending to the top of the 5-stage suspension preheater; the shale **raw meal** is fed to the flash furnace, where it is blended with the limestone. Continuous analysis of the two constituents and the use of very accurate **feeders** have enabled the **kiln** to attain a maximum output of 4. 300 t/day of good quality **clinker**. (Edited author abstract) In German.

46/3,AB/9 (Item 4 from file: 8)
DIALOG(R)File 8: Ei Compendex(R)
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02649940

E.I. Monthly No: EI8810093346
Title: ZWEIJAHRIGE BETRIEBSERFAHRUNGEN MIT AETHIOPIENS GROEBTEM
ZEMENTWERK 'NEW MUGHER' - .

Title: Two Years' Operating Experience with Ethiopia's Largest
Cement Plant - Cement Works at Extremely High Altitudes.

Author: Feige, F.

Publication Year: 1986

CODEN: ZIETE6 ISSN: 0722-4397

Language: German

Abstract: The article describes the New Mugher **cement** plant,
located about 100 km north-west of Addis Abeba, at an altitude of 2500 m.
This **cement** plant, the largest in Ethiopia, is moreover the most
ambitious industrial project yet to have been realized in that country. It
has a **clinker production** capacity of 1000 t/day. The winning
and preparatory processing of the **raw** materials, the **raw**
grinding and **raw meal** homogenizing facilities, and the rotary
kiln, **dust** collecting, **cement** grinding and packing
installations are described. (Author abstract) In German.

46/3,AB/10 (Item 5 from file: 8)
DIALOG(R)File 8: Ei Compendex(R)
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02232648

E.I. Monthly No: EIM8702-014504

Title: **CEMENT** RAW MATERIAL BLENDING: AN ADAPTIVE CONTROL STRATEGY.

Author: Albertos, P.; Morant, F.

Corporate Source: Univ Politecnica Valencia, Spain

Conference Title: Control 85, International Conference.

Conference Location: Cambridge, Engl Conference Date: 19850709

E.I. Conference No.: 08167

Source: IEE Conference Publication n 252 v 2. Publ by IEE, London, Engl
and New York, NY, USA p 387-392

Publication Year: 1985

CODEN: IECPB4 ISBN: 0-85296314-9

Language: English

Abstract: The main problem of the blending process in the **cement**
industry is to **produce** a ground meal to **feed** the **kiln** at
the desired chemical composition from raw materials whose composition is
not well known and cannot be measured continuously. Pre-homogenization
parks tend to reduce the variance of these compositions at the mill input.
In order to improve the control, we propose to estimate the raw materials
composition from ground meal analysis and to forecast the actual input to
the mill using a model of the park. The main control loop with variable
reference is implemented by a minimal variance controller, raw materials
composition is estimated by an on-line estimator feed by the results of an
X-ray analyser and average information on parks. The availability of a
model of the park allows mill input composition forecasting and better
tuning of weight feeders percentage. 3 refs.

46/3,AB/11 (Item 6 from file: 8)

DIALOG(R)File 8:EI Compendex(R)
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02001344

E.I. Monthly No: EI8608068514

E.I. Yearly No: EI86014389

Title: Enrichment of Thallium and Lead Halides: Vaporization Analysis of Electric Separator Dust from **Cement** Plants.

Title: ANREICHERUNG VON THALLIUM- UND BLEIHALOGENIDEN: VERDAMPFUNGSANALYSE VON ELEKTROFILTERSTAUEBEN AUS ZEMENTOFENANLAGEN.

Author: Weisweiler, Werner; Mallonn, Erich; Schwarz, Bernd

Source: Staub - Reinhaltung der Luft v 46 n 3 Mar 1986 p 120-124

Publication Year: 1986

CODEN: STRHAV ISSN: 0039-0771

Language: GERMAN

Abstract: The build-up of thallium and lead halide cycles during **cement production** leads to considerable enrichments of these heavy metal compounds as well as in the **kiln dust** of the preheating zone, in the electric separator dust, and in the emitted fine dust particles. Additionally, the mass streams of thallium and lead exhibit a further increase by recycling dust from electric separator into the **raw meal** silo. Vaporization analysis of electric separator dust from two types of **cement** plants, one with suspension preheater, the other with grate-type preheater (LEPOL), shows that the trace element iodine is most important concerning the chemical reactions of thallium. If vaporization analysis of both the electric separator dusts were performed in a stream of inert gas, thallium will evaporize predominantly as thalliumiodide. Application of an air or oxygen atmosphere instead of argon leads to free iodine and condensated thallium chloride. (Edited author abstract) 14 refs. In German.

46/3,AB/12 (Item 1 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

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09624321 Genuine Article#: 428LU Number of References: 28

Title: By-pass installation for **cement production** in rotary kiln (ABSTRACT AVAILABLE)

Author(s): Kader AAA (REPRINT) ; Ghazi AG

Corporate Source: Al Azhar Univ, Fac Sci, Dept Chem, Cairo//Egypt/ (REPRINT); Al Azhar Univ, Fac Sci, Dept Chem, Cairo//Egypt/; NRC, Refractories Ceram & Bldg Mat Dept, Cairo//Egypt/

Journal: SILICATES INDUSTRIELS, 2000, V65, N9-10 (SEP-OCT), P111-116

ISSN: 0037-5225 Publication date: 20000900

Publisher: BELGIAN CERAMIC SOCIETY, 4 AVE GOUVERNEUR CORNEZ, B-7000 MONS, BELGIUM

Language: English Document Type: ARTICLE

Abstract: In different countries the problem of **cement kiln dust** generated in **cement clinker production**

where its amounts up to 13% of the total amount of **clinker produced**. Dust is returned with **raw meal** together into kiln. In this case quantity of dust increases by 20-30% and alkali content in **clinker** increases too. Disadvantages of this method is the difficulty in **clinker** burning. On dependence of the raw material composition dust alkali can be represented by Na₂SO₄ or K₂SO₄.

This present work attempt at etching a picture of the role of volatile constituents in the making and use of **cement** where special emphasis has been laid on the interactive role of K, Na, S, Cl. Using by-pass system and adjustment of its percentage we can control

alkali content in **clinker** using installation by-pass ratio.

46/3,AB/13 (Item 1 from file: 144)
DIALOG(R)File 144:Pascal
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15100506 PASCAL No.: 01-0260237
Online-Qualitaetskontrolle von Rohmaterial-Massenstroemen mit Hilfe der
PGNAA-Technik
(Controle online de la qualite de debits de masse de matiere premiere a
l'aide de la technique PGNAA)
(On-line quality control of raw material flows with the PGNAA technique)
ROLT Christian
Thermo Gamma-Metrics Europa, Koeln, Germany
Journal: AT. Aufbereitungs-Technik : (1990), 2001, 42 (5) 236-242
Language: German; English Summary Language: French; English; Spanish
The quality assessment of large flows of bulk materials is generally
associated with a complex sampling procedure, sample preparation and
analysis as well as high labour costs. Decisive improvements in the quality
of the assessment of bulk materials and process control, for example in the
cement industry and coal mining, could be achieved by the
introduction of the PGNAA (Prompt Gamma Neutron Activation Analysis)
on-line measurement technique. The use of Thermo Gamma-Metrics Cross-Belt
Analyzers in **cement production**, for charging blending beds or
control of the raw blend in front of the raw mill for example, can effect a
considerable improvement in the homogeneity of the **raw meal** for
the **kiln feed**. The beneficial effects on the entire production
process and the product quality associated with this improvement are
demonstrably linked to a considerable economic advantage.

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46/3,AB/14 (Item 2 from file: 144)
DIALOG(R)File 144:Pascal
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14344698 PASCAL No.: 99-0553820
Sulfoaluminate-belite **cement** from low-calcium fly ash and
sulfur-rich and other industrial by-products
Special issue: Engineering Foundation International Conference on
Advances in **Cement** and Concrete, Banff, Alberta, Canada, 5-10 July
1998
ARJUNAN P; SILSBEE M R; ROY D M
HOOTON R D, ed
Materials Research Laboratory, The Pennsylvania State University, 110 MRL
, University Park, PA 16801, United States
The Engineering Foundation, United States.
Engineering Foundation Conference on Advances in Cement and Concrete (
Banff, AB CAN) 1998-07-05
Journal: Cement and concrete research, 1999, 29 (8) 1305-1311
Language: English
The study describes the preparation and characterization of an
environmentally friendly **cement** with performance characteristics
similar to those of Portland **cement**, from a lime **kiln** bag house
dust, a low-calcium fly ash, and a scrubber sludge. Promising
preliminary results show the formation of relatively low-temperature phases
calcium sulfoaluminate (4CaO-3Al SUB 2 O SUB 3 -SO SUB 3) and dicalcium
silicate (2CaO-SiO SUB 2) at similar 1250 Degree C if nodulized **raw**

meal is used for clinker preparation and at 1175 Degree C if powdered raw meal is used as compared to the similar 1500 Degree C sintering temperature required for Portland cement. Phases of the developed cements were predicted using modified Bogue calculations. Isothermal calorimetric measurements indicate the hydration properties of the cements are comparable to ordinary Portland cement. Mechanical properties and microstructural evaluations also were carried out.

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46/3,AB/15 (Item 3 from file: 144)
DIALOG(R)File 144:Pascal
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14300550 PASCAL No.: 99-0507311
Ein automatisches Probenahmesystem fuer die Bindemittelindustrie
(Un systeme automatique d'echantillonnage destine a l'industrie des liants)
(An automatic sampling system for the binder industry)
SCHNEIDER U
Zementwerk Bosenberg, Ahlen, Germany
Journal: AT. Aufbereitungs-Technik : (1990), 1999, 40 (9) 420-425
Language: German; English Summary Language: English; French; Spanish
Taking the example of a cement works, this paper describes the functions of a process control system for the determination, inspection and assurance of product quality. Particularly important in the context of this example is the sampling of the individual starting materials and of both the intermediate and end-products. In the example, the automatic sample collection and preparation system has been extended with the POLAB AMT analysis system. This enables 24-hour monitoring of the quality of the raw meal, the kiln feed and the cement product throughout all stages in the production process.

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46/3,AB/16 (Item 4 from file: 144)
DIALOG(R)File 144:Pascal
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13150553 PASCAL No.: 97-0410711
Coriolis principle : one step ahead
HAX H
Lime and Gypsum Industries, Schenck Process GmbH, Germany
Journal: World cement, 1997, 28 (7) 82-87 (4 p.)
Language: English
For the production of high quality products in the cement, lime and gypsum industry, gravimetric measuring and feeding systems are essential. The paper discusses applications of more efficient feeding systems. The Coriolis feeding systems can be applied to almost all kinds of dust, meal, and granulates, such as cement, raw meal, fly ash, filter dust, lime powders and hydrates, coal dusts, by-pass cement, slag meal, grits and silica meal.

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46/3,AB/17 (Item 5 from file: 144)

DIALOG(R)File 144:Pascal
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10168147 PASCAL No.: 92-0373901

The effect of minor kiln condition variations upon **clinker** quality

SAMET B; TAGNIT-HAMOU A; SARKAR S L; CAMPBELL I

Univ. Sherbrooke, fac. sci. appliquees, Canada

Journal: World cement, 1992, 23 (6) 12-17(5 p.)

Language: English

We present an analysis of the properties of **clinker** and **kiln**
dust from three identical **kilns**, using the same **raw**
meal. We show that even minor, inadvertent variations in kiln
conditions can significantly affect the formation and composition of alkali
sulfates, and the mineralogy of the principal phase in **clinker**

46/3,AB/18 (Item 1 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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004308771

WPI Acc No: 1985-135649/198523

XRAM Acc No: C85-059104

XRPX Acc No: N85-101980

Burning fine-grained material esp. for **cement clinker** prodn.

- comprises cooling waste gas from sintering step in steam generator and
using the steam for generating energy

Patent Assignee: KLOECKNER-HUMBOLDT-DEUTZ AG (KLOH); STEINMUELLER GMBH L
& C (STEM)

Inventor: BECKER J; HENDRICKS A; HERCHENBAC H; RENSINGHOF W; STEINBISS E

Number of Countries: 013 Number of Patents: 009

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
DE 3341695	A	19850530	DE 3341695	A	19831118	198523 B
EP 143395	A	19850605	EP 84113759	A	19841114	198523
DK 8405457	A	19850519				198536
US 4541245	A	19850917	US 84673109	A	19841119	198540
BR 8405860	A	19850917				198543
JP 60251158	A	19851211	JP 84240865	A	19841116	198605
ES 8601821	A	19860301	ES 537622	A	19841113	198619
EP 143395	B	19880302				198809
DE 3469512	G	19880407				198815

Priority Applications (No Type Date): DE 3341695 A 19831118

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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DE 3341695	A		20		
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EP 143395	A	G			
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Designated States (Regional): AT BE CH DE FR GB LI NL

EP 143395	B	G			
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Designated States (Regional): AT BE CH DE FR GB LI NL

Abstract (Basic): DE 3341695 A

(1). Fine-grained material is burnt by heat-treatment in a
combustion plant consisting of a pre-heating-, calcination- and
sintering step. At least a partial stream of the waste gas from the
sintering step, enriched partic. in contaminants such as alkalines, Cl₂
or S is removed, as by-pass gas, through a by-pass conduit in the zone
between the sintering step and the calcination step, to separate the
contaminants from the by-pass gas.

Novelty comprises (i) cooling the by-pass gas, at 800-1350 deg.C to 200-300 deg.C in a steam generator and (ii) cleaning the heating surfaces of the steam generator to separate at least a pt. of the contaminants condensed from the by-pass gas and, if necessary, mineral particles such as partly de-acidified furnace dust. Apparatus is also claimed.

USE/ADVANTAGE - The process is used partic. for the prodn. of **cement clinker** from crude **cement** powder. The high thermal potential of the by-pass gas is used. Energy consumption is reduced and environmental pollution is controlled.

0/3

Abstract (Equivalent): EP 143395 B

A process for the heat treatment of fine-grained material for the **production of cement clinker**, wherein the material is thermally treated in a burning plant consisting of preheating stage, calcining stage and sintering stage, and a component stream of the waste gas from the sintering stage, particularly a waste gas enriched in harmful substances such as alkalis, chlorine or sulphur (by-pass gas) is taken off in the region between the sintering stage and the calcining stage, through a by-pass line, out of which waste gas the harmful substances are separated, characterised in that the by-pass gas with a temperature from about 800 to 1350 deg.C is cooled in a steam generator to a temperature from about 200 to 300 deg.C and that at least some of the harmful substances condensed out of the by-pass gas as well as any mineral particles such as partially deacidified **kiln dust** is separated out of the bypass gas in the steam generator by cleaning down the heating surfaces of this. (11pp)

Abstract (Equivalent): US 4541245 A

A **cement clinker** mfg. system comprises in sequence a **raw meal** preheater, a calciner, a sintering kiln and a cooler. A steam generator receives the discharge of a bypass conduit connected between calciner and kiln to collect at least part of the kiln exhaust gases, and the generator heating surfaces can be cleaned to remove noxious substances which have condensed on them.

The generator is pref. a two-train reversing boiler with a radiant train able to cool the gases from 850-1350 deg. C to 500-600 deg. C and a convection train further cooling the gases to 200-300 deg. C. There are pref. separators before and after the generator for removing coarse and fine dusts from the gases.

ADVANTAGE - Exploits high thermal potential of bypass gases, to enhance prod. quality and ensure disruption-free burning

06/08/2004

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08jun04 14:51:20 User267149 Session D1436.1

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File 350:Derwent WPIX 1963-2004/UD,UM &UP=200435
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*File 350: For more current information, include File 331 in your search. Enter HELP NEWS 331 for details.

File 347:JAPIO Nov 1976-2004/Jan(Updated 040506)
(c) 2004 JPO & JAPIO

*File 347: JAPIO data problems with year 2000 records are now fixed. Alerts have been run. See HELP NEWS 347 for details.

File 344:Chinese Patents Abs Aug 1985-2004/May
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File 371:French Patents 1961-2002/BOPI 200209
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*File 371: This file is not currently updating. The last update is 200209.

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Set	Items	Description
S1	285	AU=(RUSSEL, M? OR RUSSEL M?)
S2	863	AU=(HUSSAIN, F? OR HUSSAIN F?)
S3	0	S1 AND S2
S4	1148	S1:S2
S5	1	S4 AND (KILN OR KILNED OR KILNING OR KILNS OR OVEN? ?) (3N)- (OUTPUT OR OUT()PUT OR FEED? OR DUST?)
S6	1	S4 AND (CEMENT? OR HARDEN? OR CLINKER? OR RESIDUE) (3N) (PRO- DUCE? OR PRODUCT?)
S7	0	S6 NOT S5

06/08/2004

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5/3,AB/1 (Item 1 from file: 350)
DIALOG(R) File 350:Derwent WPIX
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015387288

WPI Acc No: 2003-448233/200342

XRPX Acc No: N03-357541

Production process monitoring system for cement manufacture, involves displaying computed clinker production and cost of clinker as function of time

Patent Assignee: INVENSYS SYSTEMS INC (INVE-N)

Inventor: **HUSSAIN F**; RUSSELL M

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20030060993	A1	20030327	US 2000235491	P	20000926	200342 B
			US 2001846899	A	20010501	

Priority Applications (No Type Date): US 2000235491 P 20000926; US 2001846899 A 20010501

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030060993	A1		13	G06F-019/00	Provisional application US 2000235491

Abstract (Basic): US 20030060993 A1

Abstract (Basic):

NOVELTY - The cost of clinker is calculated based on the clinker production which is computed at the ***kiln*** ***output***. The computed clinker production and cost of clinker are displayed as functions of time.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

- (1) kiln efficiency measuring system;
- (2) finish mill efficiency measuring system; and
- (3) cement production process control system.

USE - For monitoring production process in cement manufacturing system.

ADVANTAGE - Improves plant operation performance to achieve maximum clinker quality and production at minimal cost.

DESCRIPTION OF DRAWING(S) - The figure illustrates a display screen displaying the dynamic performance measures for cement production process.

pp; 13 DwgNo 2/3